SIEMENS

ACUSON X300 Ultrasound Imaging System
System Reference

US

10348704-VFT-001-01-01

ДЕ 01

CE
0123

Siemens Medical Solutions USA, Inc.

10348704 REV 01

Software Version 3

Siemens Medical Solutions USA, Inc.
Ultrasound Division
1230 Shorebird Way
Mountain View, CA 94043-1344
U.S.A.

(800) 498-7948
(650) 969-9112

©2008 Siemens Medical Solutions USA, Inc.
All Rights Reserved.

February 2008
Printed in the Republic of Korea.

Siemens ACUSON X300, THI, MultiHertz, DIMAQ, microCase, QuickSet, SuppleFlex, Evolve Package, SynAps, TGO, DTI, 3-Scape, Axius, Clarify, SieClear, SieScape, Velocity Vector Imaging, AcuNav, and SwiftLink are trademarks or registered trademarks of Siemens AG or its subsidiaries and affiliates.

Windows, CIDEX, CIDEX Plus, CIDEX OPA, Milton, Virkon, STERRAD and Gigasept FF are registered trademarks of their respective owners.

Siemens reserves the right to change system specifications at any time.

CE Declaration

This product is provided with a CE marking in accordance with the regulations stated in Council Directive 93/42/EEC of June 14, 1993 concerning Medical Devices. Siemens Medical Solutions USA, Inc. is certified by Notified Body 0123 to Annex II.3 – Full Quality System.

Authorized EC Representative:
Siemens Aktiengesellschaft
Medical Solutions
Henkestraße 127
D-91052 Erlangen
Germany

Contents

Chapter 1 **System Presets**

Instructions for using the options in the **Presets** screen to customize the system.

Chapter 2 **Documentation Devices**

Information on documentation and storage devices, including procedures for storing and retrieving system presets and QuickSets.

Chapter 3 **DICOM Connectivity Option**

Explanation of the Digital Imaging and Communications in Medicine (DICOM) Connectivity option. This option works in conjunction with the DIMAQ-IP integrated workstation to provide digital image transfer using a DICOM network for both storage and printing.

Chapter 4 **Network Export Function**

A description of setting up and using the network export function. This function copies patient data to a password-protected shared folder on a destination device (export host) for offline-analysis.

Chapter 5 **Data Transmission Specifications**

Guidelines for transmitting data from the ultrasound system through the serial ports to a personal computer (PC).

Chapter 6 **Cardiac References**

Chapter 7 **Obstetrical References**

Note: Not all features and options described in this publication are available to all users. Please check with your Siemens representative to determine the current availability of features and options.

About the User and Reference Manuals

The user and reference manuals consist of the following publications.

Publication	Includes
Instructions for Use	▪ Technical description of the ultrasound system ▪ Safety and care information for the system and compatible transducers ▪ Descriptions of all system controls ▪ Procedures for system setup, examination fundamentals, and the biopsy function ▪ Acoustic output data
*Features and Applications Reference**	▪ Descriptions of image acquisition and optimization, including optional imaging features ▪ General and exam-specific measurements and calculations ▪ Data management ▪ Explanation of the clinical software programs for use on the ultrasound system
*System Reference**	▪ Description of customizable system settings ▪ Information about DICOM connectivity, network capabilities, and external devices ▪ Clinical references
*Electromagnetic Emissions and Immunity: Guidance and Manufacturer's Declaration**	▪ Information regarding the electromagnetic compatibility (EMC) testing of this system

*Languages supported by the user interface include a translation of this publication.

Conventions

Take a moment to familiarize yourself with these conventions.

Warnings, Cautions, and Notes	⚠ **WARNING:** Warnings are intended to alert you to the importance of following the correct operating procedures where risk of injury to the patient or system user exists. ⚠ **Caution:** Cautions are intended to alert you to the importance of following correct operating procedures to prevent the risk of damage to the system. **Note:** Notes contain information concerning the proper use of the system and/or correct execution of a procedure.
Cross-References	**Examples:** **See also:** Biohazards, Safety and Care, Chapter 2, Instructions for Use **See also:** Documentation Devices, Chapter 2, System Reference **See also:** Alphanumeric Keyboard, p. 26
Customizable System Settings	System settings available for customization are depicted as shown. **Example:** **Default Settings > Automatic Freeze Response**
Keys and Controls	Keys and controls located on the control panel are identified by uppercase, boldface type. **Example:** Rotate the **2D** control. Keys located on the keyboard are identified by boldface type. **Example:** Press the **Exam** key.
On-screen Objects	On-screen objects such as menu selections, soft key selections, and buttons are identified by boldface type. **Example:** The system displays the **Patient Registration** form.
Selection of On-screen Objects	The **SET** key on the control panel functions as a point-and-select device (similar to a computer mouse) when used with the trackball. "Select" or "click" describes this action: Roll the trackball to position the pointer (cursor) on an on-screen object and then press the **SET** key. "Drag" describes this action: Roll the trackball to position the pointer (cursor) on an on-screen object and then press and hold the **SET** key. Roll the trackball to reposition the object and then release the **SET** key.

1 System Presets

Setting General Preferences 3
Using the System Presets 3
Making Screen Selections 4
Presets Screen 5
General 1 — System Configuration Selections 6
General 2 — System Configuration Selections 7
Customizing the Sequence of Data Entry for the Patient Data Form 8
Peripheral — System Configuration Selections 9
Customize Keys — System Configuration Selections 9
Customizing the Display of Soft Key Selections 12
Storage — System Configuration Selections 13
Display — System Configuration Selections 13
Exam Configuration — System Configuration Selections 15
User-Defined Exam List — Exam Configuration Selections 16
Text Annotation — System Configuration Selections 17
Customizing Text Annotations 18
Pictogram List — System Configuration Selections 20
Customizing Pictograms 20
M & R Configuration 1 — Configuration Selections 22
Customizing the Measurement and Report Preset Settings 22
M & R Configuration 2 — Configuration Selections 29
Summary — Configuration Selections 29
Service — Serviceability Selections 30
Stress Echo — Options Selections 30
SieScape — Options Selections 31
DICOM — Options Selections 31
DIMAQ Utility — Options Selections 31
Clip Capture — Options Selections 32
Network Export — Options Selections 32
Authorization 32
Archive 34
Printer — Options Selections 34

Customizing OB and Early OB Measurements, Calculations, and Reports 35
Item & Reference Selection, Standard OB 35
2D-Mode, M-Mode, Doppler, Ratio, and Growth Analysis Tabs 35
EFW / USMA Tab 37
Item & Reference Selection, Early OB 37
Display Item, Standard OB / Early OB 37
Growth Analysis Graphs, OB and Early OB 38
Standard OB / Early OB User-Defined Formulas 39
Standard OB / Early OB User-Defined Tables 41
User-Defined Label, OB and Early OB 44

Customizing Vascular Measurements, Calculations, and Reports 45
Display Item — Cerebrovascular (C-Vascular) 45
Display Item — Peripheral Vascular (P-Vascular) 46
Display Item — Venous 46

Customizing Gynecology Measurements, Calculations, and Reports 47
Display Item — Gynecology 47

Customizing Cardiac Measurements, Calculations, and Reports 48
Measurement Order — Cardiac 49
Heading Tab 49
Label Tab 49
Display Item — Cardiac 51
User-Defined Label — Cardiac 52

Customizing Emergency Medicine Measurements, Calculations, and Reports 54
Calculation Item — Emergency Medicine 54

Customizing Fetal Echo Measurements, Calculations, and Reports 55
Display Item — Fetal Echo 55

Setting General Preferences

When the ultrasound system is installed at your site, all system settings are factory-defined. You can use the options and settings available in the ***system presets*** to set up the ultrasound system with your preferences for imaging. System presets define the configuration of the system software whenever you power on the system.

Using the System Presets

You can use the system presets at any time to change the factory (default) settings or modify your own presets.

Note: After powering on the system, you must wait until the system completes the series of self-diagnostic and calibration tests before making any changes to the system presets. These tests last a few minutes, after which the system presets are ready for use.

Siemens recommends that you back up your system presets and QuickSets onto external storage media to prevent accidental loss of your information.

To use the system presets:

1. Press the **Presets** key on the keyboard.

   The system displays the **Presets** screen, with menu items on the left and selections on the right.

2. Roll the trackball to the required menu item on the left of the screen and then press the **SET** key on the control panel.

   The system displays selections for the selected menu item.

To save changes and exit the system presets:

- Select the **Save** button at the bottom of the screen.

To discard changes and exit the system presets, choose a method:

- Select the **Cancel** button at the bottom of the screen and then select **No** in the displayed confirmation message.
- Press the **Presets** key on the keyboard and then select **No** in the displayed confirmation message.

Making Screen Selections

Use the following techniques to make selections on the right of the **Presets** screen. You can typically roll the trackball to position the trackball pointer on a menu item or setting and then press the **SET** key to complete the selection.

- **Drop-down menus** – To open the menu, roll the trackball to position the pointer on the arrow and then press the **SET** key. To make a selection, roll the trackball to highlight the selection and then press the **SET** key.

Drop-down menu.

- **Spin buttons** – To set a higher or lower numeric value, roll the trackball to position the pointer on the up or down arrow and press the **SET** key until the desired value displays.

Spin button.

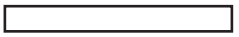
- **Check boxes** – The option is selected when a checkmark displays inside the box and de-selected when the box is clear. To select or clear the check box, roll the trackball to position the pointer in the box and then press the **SET** key.

Check box.

- **Buttons** – To select a labeled button, roll the trackball to position the pointer on the button or the label and then press the **SET** key. In some places, only one button can be selected at a time.

Option button.

- **Text entry** – Roll the trackball to position the cursor in the field and then press the **SET** key. Use the keyboard to enter text. When finished, use the **Tab** key to move to another field or roll the trackball to reposition the cursor and then press the **SET** key.



Text entry.

Presets Screen

The left side of the **Presets** screen lists the following menu items:

Menu Item	Allows you to...
General 1	Enter the hospital name, establish date / time settings and format, designate height and weight formats, and select the system monitor, audio, and boot-up settings.
General 2	Specify DGC settings, select the trackball speed, define information stored with images, enable patient demographic display and storage, and select the library of annotations for initial display.
Peripheral	Assign connections for the RS-232C (Serial) ports. Designate the video source and hard copy video polarity.
Customize Keys	Assign functionality to documentation controls, **User-Defined** keys, and the optional footswitch.
Storage	Designate image and patient report storage formats, auto recall delay, and storage destination.
Display	Specify the automatic responses when the system is frozen or unfrozen and establish Doppler and M-mode imaging settings.
Exam Configuration	Modify general settings for the selected exam type.
User-Defined Exam List	Enable or disable access to each exam type.
Text Annotation	Customize annotation libraries for selected exam types or QuickSets.
Pictogram List	Customize pictogram libraries for selected exam types or QuickSets.
M & R Configuration 1	Select caliper (measurement function) conventions and establish measurement and report presets for each type of exam.
M & R Configuration 2	Select the number of heart cycles to be used when calculating the heart rate.
Summary	Customize page elements for the Summary report.
Service	Access password-protected service procedures.
Stress Echo	Access a new screen. Displays the **Maintenance** dialog box, from which the system allows you to configure options for the optional Stress Echo feature.
SieScape	Access a new screen. Specify settings for SieScape.
DICOM	Configure the ultrasound system and connected devices (such as servers and printers) for DICOM by creating, editing, and activating aliases (DICOM configurations).
DIMAQ Utility	Access password-protected disk utility procedures.
Clip Capture	Designate clip capture parameters: capture type, clip length, R-wave delay, and JPEG compression.
Network Export	Verify selection of an existing setup, select another setup, edit an existing setup, or create a new setup for the host or export host.
Authorization	Manage accounts and passwords for access to DIMAQ study screens.
Archive	Configure archive deletion and save options.
Printer	Install and configure USB printers.

General 1 — System Configuration Selections

The **General 1** item on the **Presets** screen provides the following selections:

Selection	Option(s)	Allows you to...
Organization	---	---
Hospital Name	text entry	Enter the name of your hospital or clinic using up to 25 characters. You can modify this entry at any time.
Format	---	---
Language	**English** **German** **French** **Spanish** **Italian** **Chinese**[1] **Russian**[1]	Designates the system language.
Date Format	**Month / Day / Year** **Day / Month / Year** **Year / Month / Day**	Select the format for the date. The selected format is used in the image screen, the Patient Data form, and the patient reports.
Date & Time Settings	---	Access a new screen. Enter the current date and time.
Height & Weight Format	**Metric** **U.S.**	Select the format for the display of the patient's height and weight used in the Patient Data entry form.
Audio	---	---
Beep on Key Press	on, off	Select this check box to enable the beep to sound when a key is pressed.
Beep after Store Completes	on, off	Select this check box to enable the beep to sound when storage is completed.
Beep Volume	**1** through **4**, in increments of 1	Set the volume of the beep. Option 1 is the quietest, Option 4 is the loudest.
Line-in Volume	**Off**, **1** through **25**	Adjusts the volume of video playback.
Trackball Behavior	---	---
Trackball Travel Speed	**Low** **Medium** **High**	Select the responsiveness of the system to trackball movement. **Low** repositions an object a short distance with minimal trackball movement. **Medium** repositions an object a moderate distance with minimal trackball movement. **High** repositions an object a long distance with minimal trackball movement.
Annotation Type	---	---
Default Type	**Anatomy** **Position**	Specify the library initially displayed for the list of annotations on the screen.
Boot Up	---	---
Active Transducer	**LC1** **LC2** **LC3**	Select a linear or curved array transducer port to be active when you power on the system.

[1] Supported languages are dependent on regional availability.

Selection	Option(s)	Allows you to...
Power Off	**Shutdown Confirmation Dialog** **Power Off**	Select the system response when the partial power on/off switch (⏻) is pressed. **Shutdown Confirmation Dialog** — Displays a confirmation dialog box when powering off the system. **Power Off** — Powers off the system directly.

General 2 — System Configuration Selections

The **General 2** item on the **Presets** screen provides the following selections:

Selection	Option(s)	Allows you to...
Patient ID	---	---
AutoStore New Patient Form	on, off	Automatically store a screen representation of the completed patient data form to the registered patient's study.
Hide Patient Information	on, off	Display or hide the patient demographic.
Customize Entry Order…	---	Access a new screen. Customize the order entry sequence in the patient data form.
Common Mode	---	- - -
Delete Pictogram on Unfreeze	on, off	Select this check box to erase an on-screen pictogram after an image is unfrozen.
Delete Text on Unfreeze	on, off	Select this check box to erase on-screen text annotation after an image is unfrozen.
Default Annotation Library	**On** **Off**	Displays the list of annotations on the screen when you activate the annotation function.
Pictogram Location	**Upper Right** **Lower Right**	Displays the pictogram at the selected screen location.
Font Size	**12**, **14**, **16**, **18**, **20**	Select the point size of the font used for annotations.
Arrow Size	**Small (Type1)** **Small (Type2)** **Small (Type3)** **Medium (Type1)** **Medium (Type2)** **Medium (Type3)** **Large (Type1)** **Large (Type2)** **Large (Type3)**	Select the size and the type of the directional arrows used for annotations.
Patient Registration	**Original** **e-entry**	**Original** uses the standard patient registration form with conventional requirements for data entry and with modified requirements for data entry: ▪ Automatically entered year for **History** fields with OB, Early OB, GYN, EM and Fetal Echo exam types (when month and day are entered). ▪ Editable fetal age (**Age** field for OB, Early OB, EM and Fetal Echo exam types). **e-entry** displays an overlay of patient identification fields on the image screen.
Measurement Result Display Size	**Small** **Medium** **Large**	Select the size of display for the measured results.

Customizing the Sequence of Data Entry for the Patient Data Form

Note: This selection applies to the original patient data form only. To display an abbreviated patient registration form, use the system presets to select the e-entry form.

During patient registration, pressing the **Tab** key on the keyboard moves the text cursor to the beginning position of the next entry field in the patient data form. You can change the order entry sequence by restricting the **Tab** key to move through only the fields selected in the **Customize Entry Order** screen.

The **Customize Entry Order** screen has two columns: **Selectable Entries** on the left (the factory-default is blank) and **Entry Order** on the right (the factory-default lists all fields on the patient data form). The order of the entries in the **Entry Order** column indicates the order of the cursor in the patient data form when the **Tab** key is pressed.

Although you can customize the movement of the **Tab** key through the fields on the patient data form, the layout of the fields on the form is unchanged.

Note: You can use the trackball and **SET** key to move to any field on the patient data form.

To use the Customize Entry Order screen:

1. Press the **Presets** key on the keyboard to display the system presets and then select **General 2** from the left of the screen.
2. Select the **Customize Entry Order** from the right of the screen.
3. To remove a field from the **Entry Order** column, select the name of the field and click **Delete**.
4. To remove all fields from the **Entry Order** column, click **Delete All**.
5. To insert a field from the **Selectable Entries** column, select the name of the field and click **Add**.
6. To change the order of fields in the **Entry Order** column, select the name of the field and click **Move Up** or **Move Down**.
7. To restore the factory default settings, select the **Default** button at the bottom of the screen and then select the **Yes** button in the displayed message box to confirm the action.

Peripheral — System Configuration Selections

The **Peripheral** item on the **Presets** screen provides the following selections:

See also: Data Transmission Specifications, Chapter 5, System Reference

Note: The system does not allow identical options (except **Off**) for the **External RS-232C Port #1** and the **External RS-232C Port #2** selections. If you select an option for this selection (other than **Off**) that is identical to the option currently selected for the **External RS-232C Port #1** selection, then the system sets the **External RS-232C Port #1** selection to **Off**.

Selection	Option(s)	Allows you to...
Video	---	---
Video Format	**NTSC** **PAL**	Select the video format for output to the onboard printer.
Video Input Source	**Composite** **S-VHS**	Assign video input functionality. **Composite:** Black and white video source **S-VHS:** Color video source.
External RS-232C Port #1	**Off** **PC2** **VCR / DVR** **Color Printer**	Assign functionality to the serial port on the input / output panel of the ultrasound system. **PC2** enables data transmission through the serial port to an external personal computer (PC) or a workstation. **VCR / DVR** enables the video recording device. **Color Printer** enables the color printer.
External RS-232C Port #2	**Off** **PC2** **VCR / DVR** **Color Printer**	Assign functionality to the serial port on the input / output panel of the ultrasound system. **PC2** enables data transmission through the serial port to an external personal computer (PC) or a workstation. **VCR / DVR** enables the video recording device. **Color Printer** enables the color printer.
VCR / DVR	---	---
Device Type	**Mitsubishi MD3000** **JVC BD-X201** **None**	Select the VCR / DVR device.
Key Function	**Record / Pause** **Record / Stop**	Assign functionality to the **VCR / DVR** key.

Customize Keys — System Configuration Selections

The **Customize Keys** item on the **Presets** screen provides the following selections:

Selection	Option(s)	Allow you to…
Key Direction	---	---
Depth	**CW** **CCW**	Assign the direction of rotation to the **DEPTH** control for increasing the depth. (**CW** = Clockwise, **CCW** = Counterclockwise)
Zoom	**CW** **CCW**	Assign the direction of rotation to the **ZOOM** control for increasing the magnification factor. (**CW** = Clockwise, **CCW** = Counterclockwise)
Focus	**CW** **CCW**	Assign the direction of rotation to the **FOCUS** control for decreasing the depth of the focal zone marker (to the near field). (**CW** = Clockwise, **CCW** = Counterclockwise)

Selection	Option(s)	Allow you to…
Key Function	---	---
Soft Menu	**Customize…**	Access a new screen. Displays the **Soft Menu** screen, from which the system allows you to customize the display of soft key selections.
Print/Store 1 Key	**B/W Print** **Color Print** **PC Printer** **USB B/W** **USB Color Disk Store** **Volume Store** **Clip Capture** **DICOM B/W Print** **DICOM Color Print** **Disk Store & B/W Print** **Disk Store & Color Print** **Disk Store & PC Printer** **Disk Store & USB B/W** **Disk Store & USB Color**	Assign functionality to the **PRINT/STORE1** key. **Note:** The selections for USB printers (for example, **PC Printer** or **Disk Store & USB B/W**) are available when you select a USB printer (located in the **Printer** section of the **Printer** presets screen).
Print/Store 2 Key	**B/W Print** **Color Print** **PC Printer** **USB B/W** **USB Color** **Disk Store** **Volume Store** **Clip Capture** **DICOM B/W Print** **DICOM Color Print** **Disk Store & B/W Print** **Disk Store & Color Print** **Disk Store & PC Printer** **Disk Store & USB B/W** **Disk Store & USB Color**	Assign functionality to the **PRINT/STORE2** key. **Note:** The selections for USB printers (for example, **PC Printer** or **Disk Store & USB B/W**) are available when you select a USB printer (located in the **Printer** section of the **Printer** presets screen).
Clip Store Key	**Disk Store** **Volume Store** **Clip Capture**	Assign functionality to the **CLIP STORE** key.
Left Pedal	**Freeze** **B / W Print** **Color Print** **Disk Store** **Clip Capture** **Rotate 90° Clockwise (TEE)** **Rotate 90° Counter Clockwise (TEE)** **Caliper** **Update/View** **Escape/Timer** **4B** **Split** **TGO Update** **U/D Flip** **L/R Flip** **USB B/W** **USB Color**	Assign functionality to the left pedal of the optional footswitch. **Note:** The selections for USB printers (for example, **PC Printer** or **Disk Store & USB B/W**) are available when you select a USB printer (located in the **Printer** section of the **Printer** presets screen).

Selection	Option(s)	Allow you to…
Right Pedal	**Freeze** **B / W Print** **Color Print** **Disk Store** **Clip Capture** **Rotate 90° Clockwise (TEE)** **Rotate 90° Counter Clockwise (TEE)** **Caliper** **Update/View** **Escape/Timer** **4B** **Split** **TGO Update** **U/D Flip** **L/R Flip** **USB B/W** **USB Color**	Assign functionality to the right pedal of the optional footswitch. **Note:** The selections for USB printers (for example, **PC Printer** or **Disk Store & USB B/W**) are available when you select a USB printer (located in the **Printer** section of the **Printer** presets screen).
User-Defined 1 Key	**4B** **Split** **Sector** **U / D Flip** **L / R Flip** **Full Size** **Full D** **Full M** **Dir Power** **ECG** **Exam** **Report** **Graph** **Arrow** **Clip Capture** **Biopsy** **Volume Store** **Clarify VE** **None**	Assign functionality to the **USER DEFINE 1** key.
User-Defined 2 Key	**4B** **Split** **Sector** **U / D Flip** **L / R Flip** **Full Size** **Full D** **Full M** **Dir Power** **ECG** **Exam** **Report** **Graph** **Arrow** **Clip Capture** **Biopsy** **Volume Store** **TGO Update** **Clarify VE** **None**	Assign functionality to **USER DEFINE 2** key.

Selection	Option(s)	Allow you to…
NEW Key	**Not Used** **Close Study** **Close Study and reload boot-up setting**	Select the system response when the **NEW** key is pressed. **Not Used** disables the **NEW** key. **Close Study** closes the current study. **Close Study and reload boot-up setting** closes the current study and resets the system with the boot-up setting.
Exchange Key Functionality	---	---
Exchange Functionality of Set and Escape key	on, off	Exchange the functionality of the **SET** key and **ESCAPE** key on the control panel.

Customizing the Display of Soft Key Selections

You can rearrange or remove the soft key selections available for the following modes of operation:

- 2D-mode
- Color Flow
- Power
- M-mode
- Doppler
- 3D imaging

Each mode has a tab for real-time imaging selections (Live [**Lv**]) and a tab for system freeze selections (**Frz**). Each tab has multiple "pages" of soft key selections. The soft key selections are represented as buttons on the **Soft Menu** screen in the system presets.

Note: An asterisk (*) indicates there are unsaved changes on a tab.

To remove soft key selections from buttons:

1. To remove a single soft key selection:
   a. Select the button representing the soft key selection.

      The system displays a drop-down list of available options below the selected button.

   b. Select **Blank**.

      Blank displays on the selected button.
2. To remove a page of soft key selections, select the **<<** or **>>** button to access the page and then select the **Delete Page** button.

   The system removes the labels from all buttons on the page.
3. To remove a tab of soft key selections, select the **Delete All** button.

   The system removes the labels from all buttons on all pages of the tab.

To assign a new soft key selection to a button:

1. Select the required button representing the soft key selection.

   The system displays a drop-down list of available options below the selected button.

2. Select the required label.

   The button displays the new soft key option.

3. Repeat steps 1 and 2 as required.

To reset the soft key selections to factory default settings:

- Select the **Default** button at the bottom of the screen and then select the **Yes** button in the displayed message box to confirm the action.

Storage — System Configuration Selections

The **Storage** item on the **Presets** screen provides the following selections:

Selection	Option(s)	Allows you to…
Image Store	---	---
Image Store Format	**TIFF** (tagged-image file format)	Select the format for storing the image and patient data to the disk drive. **Note:** This selection indicates the image store format used by the system.
Image Store Format with Caliper	on, off	Select whether to store caliper (measurement) information with the image.
Size	**Full Screen (1024x768)** **Diagnostic Window Only (800x600)**	Selects the storage size of the image screen.

Display — System Configuration Selections

The **Display** item on the **Presets** screen provides the following selections:

Selection	Option(s)	Allows you to…
Monitor	---	---
Enable Screen Saver	on, off	Select this check box to activate or uncheck to deactivate the screen saver.
Screen Saver Delay	**5** **10** **15** **20**	Select the time delay (in minutes) before the system activates the screen saver.
Screen Saver Type	**Black** **SIEMENS**	Select the background for the screen saver.
Display	---	---
Video Invert	on, off	Select the polarity of the video display for the main image screen. Text is always white against gray or gray against white. On (checked) displays a white image area against a black background. Off (cleared) displays a black image area against a white background.

Selection	Option(s)	Allows you to…
DGC	---	---
DGC Invert with Image Invert	on, off	Select this check box to invert the DGC graphic on the image screen when you rotate the image.
DGC Curve Display	**Off** **Always On** **Time Out**	Select when the DGC graphic displays on the image screen. **Off** prevents the DGC from displaying on the image screen. **Always On** displays the DGC continuously on the image screen. **Time Out** removes the DGC from the screen three seconds after you adjust the curve. When you adjust the DGC controls again, the curve reappears on-screen.
DGC Control	**Max image depth** **Current image depth**	Select the image depth setting.
Thermal Index Display(Neo Head Exam only)	**TIS / TIB** **TIC**	Select whether to display **TIS / TIB** (Soft Tissue Thermal Index / Bone Tissue Thermal Index) or **TIC** (Cranial Bone Thermal Index) during neonatal head exams.
Doppler / M-Mode	---	---
Bypass M / D Cursor Display	on, off	Select the system response when the **M** or **D** control is pressed. Select this check box to immediately display M-mode or Doppler. De-select the check box to initially display an M-mode or Doppler cursor in the 2D-mode image; the **M** or **D** control must then be pressed a second time for M-mode or Doppler to display.
Doppler Search Mode	on, off	Select this check box to activate Doppler Search Mode by pressing the **D** control, and audibly interrogate vessels with Doppler in 2D-mode before displaying the Doppler spectrum.
Doppler Frequency / Velocity	**Frequency** **Velocity**	Display frequency (Hz) or velocity (cm/s) as a unit in the Doppler spectrum.

Exam Configuration — System Configuration Selections

The **Exam Configuration** item on the **Presets** screen provides the following selections:

Selection	Option(s)	Allows you to...
Exam	**Abdomen** **OB** **Early OB** **GYN** **MSK** **Breast** **Thyroid** **Testicle** **Urology** **Cardiac** **Orthopedic** **P-Vascular** **C-Vascular** **Venous** **Renal** **Fetal Echo** **Ped Abd** **Ped Echo** **Penile** **Neo Head** **Sup MSK** **TCD** **Digital** **EM** **Small Parts** **OB(J)** **TEE**	Select an exam for customization.
Automatic Freeze Response	**Caliper** **Arrow** **Text** **Cine** **Pictogram**	Select the system response when the **FREEZE** key is pressed. **Cine** activates the CINE function. **Caliper** activates the measurement function. **Text** activates the annotation function. **Arrow** activates the arrow function.
Seamless Dual	**On** **Off**	Activate seamless display of dual and split images.
Steer Angle Type (VF10-5 Only)	**FOV-1** **FOV-2**	Specify the steering angle for the VF10-5 transducer.
2D/M & 2D/Doppler Display Format	**1/2 2D – 1/2 trace** **1/3 2D – 2/3 trace** **2/3 2D – 1/3 trace** **Side by side**	Specify the image screen layout when two imaging modes are active. **1/2 2D – 1/2 trace** presents 2D-mode on the right side of the upper 1 / 2, with M-mode or Doppler in the lower 1/2. **1/3 2D – 2/3 trace** presents 2D-mode on the right side of the upper 1 / 3, with M-mode or Doppler in the lower 2/3. **2/3 2D – 1/3 trace** presents 2D-mode on the right side of the upper 2/3, with M-mode sweep or Doppler spectrum in the lower 1/3. **Side by side** presents 2D-mode in the left 40 percent of the screen and either the M-mode sweep or the Doppler spectrum in the right 60 percent of the screen.
Default Doppler Update Style	**2D-Frz / D-Lv** **2D-Lv / D-Lv** **D-Lv / 2D-1s** **D-Lv / 2D-2s** **D-Lv / 2D-4s** **D-Lv / 2D-8s** **D-Lv / 2D-EOS**	Select display of real-time 2D image during update or select the update interval for the 2D image during update. The update interval for **D-Lv / 2D-EOS** is the end of the sweep.

Selection	Option(s)	Allows you to...
Linear Steer Color Invert	**On** **Off**	Select **On** to automatically invert the color velocity scale when you steer the ROI.
Auto Invert of Color and Spectrum	**On** **Off**	Select **On** to invert the Doppler spectrum and the color bar together in 2D-mode with Color / Doppler when the **INVERT** key is pressed.
2D-Mode Steer with Cursor	**On** **Off**	Select **On** to allow the 2D-mode display to be steered by moving the Doppler cursor.
Physio Management	---	---
ECG Display	on, off	Select this check box to display the related trace when the selected exam is activated. ECG trace displays from the ECG input.
Indicate R-Wave	on, off	Select this check box to identify R-wave triggers in CINE and also to indicate poor detection of an R-wave.
Auto FOV with Color Activation	**On** **Off**	Automatically adjust the 2D-mode field of view (FOV) to the color region of interest (ROI).

User-Defined Exam List — Exam Configuration Selections

The **User-Defined Exam List** item on the **Presets** screen provides the following selections:

Note: The currently activated exam is unavailable (dithered). The default exam for each transducer will continue to display in the Exam list when an exam is de-selected in the **User-Defined Exam List** screen.

Selection	Option(s)	Allows you to...
Enable Exam	---	Customize the list of available exams for some items in the **Presets** screen.
Abdomen	on, off	
OB	on, off	
Early OB	on, off	
GYN	on, off	
MSK	on, off	
Breast	on, off	
Thyroid	on, off	
Testicle	on, off	
Urology	on, off	
Cardiac	on, off	
Orthopedic	on, off	
P-Vascular	on, off	
C-Vascular	on, off	
Venous	on, off	
Renal	on, off	
Fetal Echo	on, off	
Ped Abd	on, off	
Ped Echo	on, off	
Penile	on, off	
Neo Head	on, off	
Sup MSK	on, off	
TCD	on, off	
Digital	on, off	
EM	on, off	
Small Parts	on, off	
OB(J)	on, off	
TEE	on, off	

Text Annotation — System Configuration Selections

The **Text Annotation** item on the **Presets** screen provides the following selections (below the title **Customize Text Annotation**):

Selection	Option(s)	Allows you to...
Exam & QuickSet	**Abdomen** **OB** **Early OB** **GYN** **MSK** **Breast** **Thyroid** **Testicle** **Urology** **Cardiac** **Orthopedic** **P-Vascular** **C-Vascular** **Venous** **Renal** **Fetal Echo** **Ped Abd** **Ped Echo** **Penile** **Neo Head** **Sup MSK** **TCD** **Digital** **EM** **Small Parts** **OB(J)** **TEE**	Select an exam type or QuickSet for customization.
Text Annotation	**Anatomy** **Position**	Display the selected list (library) of annotations.
(text box)	---	Enter a user-defined annotation or change the selected annotation.
Modify	---	Replace the selected annotation with the characters displayed in the text box.
Add	---	Insert the annotation that is displayed in the text box into the displayed list (library).
Delete	---	Remove the annotation that is displayed in the text box from the displayed list (library).
Move Up	---	Shift the selected annotation to the next highest position within the list (library).
Move Down	---	Shift the selected annotation to the next lowest position within the list (library).

Customizing Text Annotations

Each exam type has a list of text annotations for anatomical structures and body positions.

You can display a library of annotations for an exam type or QuickSet, use the scroll bar to display additional selections, insert, edit, and remove annotations, change the position of annotations within the library, and reset the annotation library to factory defaults.

To display a library of annotations for an exam type or QuickSet:

1. Press the **Presets** key on the keyboard to display the system presets and then select **Text Annotation** from the left of the screen.

   The system displays the **Customize Text Annotation** screen.

2. Select the exam type or QuickSet from the **Exam & QuickSet** drop-down list.
3. To exit the system presets without saving changes, select the **Cancel** button at the bottom of the screen and then select **No** to confirm the action.

To display additional selections when a scroll bar is displayed:

1. Roll the trackball to the up or down arrow on the scroll bar to the right of the selections and press and hold the **SET** key.
2. Roll the trackball until the required selections are displayed and then release the **SET** key.

To insert an annotation into the displayed library:

1. To specify the location for the new annotation, select an existing annotation within the library.

   The system highlights the selected annotation and displays the annotation in the text box.

2. Use the keyboard to delete the text in the text box and then enter the new annotation into the text box.

   Note: You can enter up to 25 characters.

3. Select the **Add** button.

   The system inserts the new annotation below the selected existing annotation within the library.

4. To save changes and exit the system presets, select the **Save** button at the bottom of the screen.

To edit an annotation in the displayed library:

1. Select the annotation within the library.

   The system highlights the selected annotation and displays the annotation in the text box.

2. Use the keyboard to edit the annotation in the text box.
3. Select the **Modify** button.

   The system replaces the selected annotation with your edits.

4. To save changes and exit the system presets, select the **Save** button at the bottom of the screen.

To remove an annotation from the displayed library:

1. Select the annotation within the library.

   The system highlights the selected annotation and displays the annotation in the text box.

2. Select the **Delete** button.
3. To save changes and exit the system presets, select the **Save** button at the bottom of the screen.

To change the position of an annotation within the displayed library:

1. Select the annotation within the library.

   The system highlights the selected annotation and displays the annotation in the text box.

2. To shift the annotation to the next highest position within the library, select the **Move Up** button.
3. To shift the annotation to the next lowest position within the library, select the **Move Down** button.
4. To save changes and exit the system presets, select the **Save** button at the bottom of the screen.

To reset annotations for the selected exam type or QuickSet to factory defaults:

- Select the **Default** button at the bottom of the screen and then select the **Yes** button in the displayed message box to confirm the action.

Pictogram List — System Configuration Selections

The **Pictogram List** item on the **Presets** screen provides the following selections (below the title **Customize Pictogram List**):

Selection	Option(s)	Allows you to...
Exam & QuickSet	**Abdomen** **OB** **Early OB** **GYN** **MSK** **Breast** **Thyroid** **Testicle** **Urology** **Cardiac** **Orthopedic** **P-Vascular** **C-Vascular** **Venous** **Renal** **Fetal Echo** **Ped Abd** **Ped Echo** **Penile** **Neo Head** **Sup MSK** **TCD** **Digital** **EM** **Small Parts** **OB(J)** **TEE**	Select an exam type or QuickSet for customization.
All Pictograms	---	Display the pictograms available on the system.
Selected	---	Display the library of pictograms for the selected exam type or QuickSet.
Add	---	Insert the selected pictogram into the displayed library.
Delete	---	Remove the selected pictogram from the displayed library.
Move Up	---	Shift the selected pictogram to the next highest position within the library.
Move Down	---	Shift the selected pictogram to the next lowest position within the library.

Customizing Pictograms

Each exam type has pictograms that can be selected when the exam type is active. The pictograms are stored in libraries that you can edit for each exam type. The first available pictogram in the library displays on the screen when you press the **PICTOGRAM** key on the control panel.

You can display the library of pictograms for an exam type or QuickSet, use the scroll bar to display additional selections, insert and remove pictograms, change the position of pictograms within the library, and reset the pictogram library to factory defaults.

To display the library of pictograms for an exam type or QuickSet:

1. Press the **Presets** key on the keyboard to display the system presets and then select **Pictogram List** from the left of the screen.

   The system displays the **Customize Pictogram List** screen.

2. Select the exam type or QuickSet from the **Exam & QuickSet** drop-down list.
3. To exit the system presets without saving changes, select the **Cancel** button at the bottom of the screen and then select **No** to confirm the action.

To display additional selections when a scroll bar is displayed:

1. Roll the trackball to the up or down arrow on the scroll bar to the right of the selections and press and hold the **SET** key.
2. Roll the trackball until the required selections are displayed and then release the **SET** key.

To insert a pictogram into the displayed library:

1. Select the new pictogram from the **All Pictograms** section of the screen.
2. Select the **Add** button.

   The system places the new pictogram at the bottom of the list in the **Selected** section of the screen.

3. To save changes and exit the system presets, select the **Save** button at the bottom of the screen.

To remove a pictogram from the displayed library:

1. Select the pictogram from the **Selected** section of the screen.

   The system outlines the selected pictogram.

2. Select the **Delete** button.
3. To save changes and exit the system presets, select the **Save** button at the bottom of the screen.

To change the position of a pictogram within the displayed library:

1. Select the pictogram from the **Selected** section of the screen.

   The system outlines the selected pictogram.

2. To shift the pictogram to the next highest position within the library, select the **Move Up** button.
3. To shift the pictogram to the next lowest position within the library, select the **Move Down** button.
4. To save changes and exit the system presets, select the **Save** button at the bottom of the screen.

To reset pictograms within the displayed library to factory defaults:

- Select the **Default** button at the bottom of the screen and then select the **Yes** button in the displayed message box to confirm the action.

M & R Configuration 1 — Configuration Selections

The **M & R Configuration 1** item on the **Presets** screen provides the following selections:

Selection	Option(s)	Allows you to…
Measurement and Report Preset	---	---
Report Data Auto Store	on, off	Select the check box to automatically store the patient report and measurement data to the DIMAQ-IP integrated workstation when studies are ended.
(Drop-down list)	**Abdomen** **OB** **Early OB** **GYN** **MSK** **Breast** **Thyroid** **Testicle** **Urology** **Cardiac** **Orthopedic** **P-Vascular** **C-Vascular** **Venous** **Renal** **Fetal Echo** **Ped Abd** **Ped Echo** **Penile** **Neo Head** **Sup MSK** **TCD** **Digital** **EM** **Small Parts** **OB(J)** **TEE**	Change measurement and report settings for the selected exam type.

Customizing the Measurement and Report Preset Settings

The **Measurement and Report Preset** section allows you to customize each exam type.

Measurement Method

(For use with all exam types)

Use this selection to establish a shortcut to a specific measurement method.

The upper section of this screen allows you to select the method activated when the system first enters the measurement function for the specified imaging mode.

The lower section of this screen allows you to select a specific method for automatic activation when a general measurement method is selected in the measurement function. For example, if **Ellipse** is selected in the **Area** field, selecting **Area** from the list of general measurement methods automatically activates the Ellipse method.

To select the Default Measurement Method by Mode:

1. For each imaging mode, roll the trackball to the arrow on the right side of the method field and then press the **SET** key.

   The system displays a pull-down menu of available measurement methods for this imaging mode.

2. Roll the trackball to highlight a measurement method and then press the **SET** key.

   The highlighted method becomes the default for this imaging mode.

To select the Default Measurement Method:

1. For each measurement method category, roll the trackball to the arrow on the right side of the method field and then press the **SET** key.

   The system displays a pull-down menu of specific methods.

2. Roll the trackball to highlight a measurement method and then press the **SET** key.

   The highlighted method becomes the default for this method category.

Customize Keys

(For use with all exam types)

You can customize the display of soft key selections for use during the measurement function for the following modes:

- 2D-mode
- M-mode
- Doppler

See also: Customizing the Display of Soft Key Selections, p. 1-12

General Configuration

(For use with all exam types)

Selection	Option(s)	Allows you to…
General Caliper	---	Change general settings that apply to all exam types.
Caliper Default Position	**Center** **Menu** **Depth**	Assign trackball control to the pointer or measurement marker when the measurement function is initiated. **Center** displays the first marker in the center of the image screen. A depth value does not display. **Menu** displays the trackball pointer in the Measurement Menu if a label is available. For exam types with no labels, the trackball pointer remains in the center of the image screen when **Menu** is selected. **Depth** displays the first marker in the center of the image screen, with a dotted line representing the depth from the skin line. A depth value displays in the Measured Results area of the image screen until you anchor the first marker.
Caliper Pattern	**x** **+**	Specify the shape of the caliper. You can specify one shape at a time for the entire system. Multiple measurements use the same shape, but are differentiated by number.
Caliper Size	**Small** **Medium** **Large**	Specify the size of the caliper for use by the entire system. A smaller size may make a larger number of calipers easier to view.
Measurement Results Background	**On** **Off**	Activate or deactivate a background for the Measured Results section of the image screen.
Measurement Result Display	---	---
2D-Mode	**Top** **Bottom** **Left** **Right**	Displays the Measured Results at the selected screen location in 2D-Mode.
Doppler/M-Mode	**Top** **Bottom** **Left** **Right**	Displays the Measured Results at the selected screen location in Doppler or M-Mode.

Measurement Order

(For use with the following exam types only: GYN, P-Vascular, C-Vascular, Fetal Echo, Penile, TCD,)

Use this selection to add and delete labels and to rearrange the order in which labels appear in the Measurement Menu. The **Measurement Order** screen presents two columns of entries: **Selectable Label** on the left and **Measurement Order** on the right. Add labels from left to right or delete labels from right to left. User-defined labels initially appear on the left.

To select an imaging mode (GYN, Fetal Echo, TCD exam types only):

- Roll the trackball to the down arrow for the **Mode** drop-down menu, select the required imaging mode and then press the **SET** key.

To add labels:

1. Roll the trackball to a selectable label on the left and then press the **SET** key.

   The system highlights the label.

2. Roll the trackball to the **Add** button and then press the **SET** key.

   The label is moved to the bottom of the **Measurement Order** list on the right.

3. Repeat steps 1 and 2 for other labels, as required.

To delete labels:

1. Roll the trackball to a label in the **Measurement Order** list on the right and then press the **SET** key.

   The system highlights the label.

2. Roll the trackball to the **Delete** button and then press the **SET** key.

   The label is moved to the bottom of the **Selectable Label** list on the left.

3. Repeat steps 1 and 2 for other labels, as required.

To rearrange labels:

1. Roll the trackball to one of the labels in the **Measurement Order** list on the right and then press the **SET** key.

   The system highlights the label.

2. Roll the trackball to the **Move Up** or **Move Down** button and then press the **SET** key.

   The label moves up or down one space in the list.

3. Repeat steps 1 and 2 as required to create a restructured **Measurement Order** list.

To reset labels back to factory default positions:

1. Roll the trackball to the **Default** button and then press the **SET** key.

   The system prompts you to confirm your choice.

2. Roll the trackball to the **Yes** button and then press the **SET** key to continue.

Follicle Measurement Method – Gynecology Exam

The gynecology exam **Measurement Order** screen contains an extra field for specifying the Follicle Measurement Method.

To select the Follicle Measurement Method (Gynecology exam):

1. Roll the trackball to the arrow on the right of the **Follicle Measurement Method** field and then press the **SET** key.

   The system displays a drop-down menu of available selections.

2. Roll the trackball to highlight one of the selections and then press the **SET** key.

   The highlighted selection becomes the new Follicle Measurement Method.

LV (Left Ventricle) Measurement Method – Fetal Echo Exam

The fetal echo exam **Measurement Order** screen contains an extra field for specifying the LV Measurement Method.

To select the LV Measurement Method (Fetal Echo exam):

1. Roll the trackball to the arrow on the right of the **LV Measurement Method** field and then press the **SET** key.

   The system displays a drop-down menu of available selections.

2. Roll the trackball to highlight one of the selections and then press the **SET** key.

   The highlighted selection becomes the new LV Measurement Method.

Display Item

(For use with the following exam types only: Urology, Orthopedic, Emergency Medicine, Penile, TCD)

Use this selection to control display of various items on the measurement screen and in the patient report. The **Display Item** screen is unique for each exam type.

Selection	Option(s)	Allows you to...
Measurement Screen	---	---
Abbreviated Display of Results	on, off	Select this check box to display only labels with assigned measurement values in the Measured Results. De-select the check box to display all labels on the Measurement Menu in the Measured Results.
Hip Angle Graph (Ortho exam only)	on, off	Select this check box to display the sonographic hip angle graph when an Ortho exam measurement has been completed.
Report	---	---
Performing MD	on, off	Select this check box to include the Performing MD entered in the Patient Data form at the bottom of the report page.
Referring MD	on, off	Select this check box to include the Referring MD name entered in the Patient Data form at the bottom of the report page.

User-Defined Label

(For use with the following exam types only: GYN, P-Vascular, C-Vascular)

Use this selection to designate special measurement labels.

See also: User-Defined Label, OB and Early OB, p. 1-44

See also: User-Defined Label — Cardiac, p. 1-52.

To create a user-defined label:

1. Roll the trackball to the **NAME** field and then press the **SET** key.
2. Use the keyboard to type in a label name.
3. Select a required measurement method from the drop-down list.

   Note: Measurement method selection is available for the GYN exam only.
4. Repeat steps 1 through 3 for each label.
5. When all labels have been entered, roll the trackball to the **Save** button and then press the **SET** key.

Note: For user-defined labels to appear in the Measurement Menu, you must add them to the Measurement Order list using the **Measurement Order** screen.

To delete a user-defined label:

- Click **Delete Label**.

User-Defined Formula

(For use with the following exam types only: P-Vascular, C-Vascular)

See also: Standard OB / Early OB User-Defined Formulas, p. 1-39.

To create a user-defined formula:

1. From the **Measurement and Report Preset** selections for the C-Vascular or P-Vascular exam, roll the trackball to the **User-Defined Formula** button and then press the **SET** key.

   The system displays the **User-Defined Formula** screen.
2. Roll the trackball to the first field and then press the **SET** key.
3. Use the keyboard to enter up to eight characters as the name for the formula.
4. Enter the formula in the field below the formula name. Use the keyboard to enter any of the numbers and operators shown in the **Operation** box at the bottom of the screen.
5. Roll the trackball to any of the Variable Labels on the right and then press the **SET** key to include the variable in the formula.
6. Define constants by first rolling the trackball to the **Value** field to the right of the constant label letter and then pressing the **SET** key.
7. Enter a numeric value of up to eight characters, including a decimal point if required and then press the **Enter** key on the keyboard.

8. To insert a constant into a formula, roll the trackball to the appropriate letter in the **Label** column and then press the **SET** key.

   The system inserts the label letter into the formula.

   Note: You can use parentheses, but do not use spaces to separate elements in your formula. Do not delete any of the quote marks entered by the system. You can enter up to 64 characters in the formula field. To conserve space, you can assign a letter value to a constant and enter the letter into your formula instead of the full constant.

9. For additional formulas, roll the trackball to a different formula tab and then press the **SET** key. Repeat steps 2 through 8.

To delete a user-defined formula:

- Roll the trackball to the **Delete Formula** button and then press the **SET** key.

  The system deletes the formula for this tab.

To exit the User-Defined Formula screen:

1. To exit and save the formula, roll the trackball to the **Save** button and then press the **SET** key.

   The system informs you if there is a syntax or other error in the formula. Resolve the problem and exit again.

2. To exit and not save the formula, roll the trackball to the **Previous** button and then press the **SET** key.

   The system queries you to save changes by selecting **Yes** or discard changes by selecting **No**.

Comments Library for Report

(For use with the following exam types only: OB, Early OB, GYN, Urology, Cardiac, Orthopedic, P-Vascular, C-Vascular, Venous, Ped Echo, Penile, TCD, EM, TEE)

For exam types with reports, you can enter ten comments for automated inclusion into the report. A maximum of 256 characters is allowed per comment.

Creating a library of comments for a patient report saves you time, particularly for recurring examinations. Rather than entering a phrase in the comment section of a report, you can access pre-defined comments for quick entry by rolling the trackball to the **Comments** button and then pressing the **SET** key.

To enter comments:

1. Roll the trackball to one of the comment fields and then press the **SET** key.
2. Use the keyboard to type in up to 256 alphanumeric characters.
3. Repeat steps 1 and 2 for each required comment.
4. Complete comment entry by rolling the trackball to the **Save** button and then pressing the **SET** key.

Report Tab

(For use with the following exam types only: GYN, EM)

Use this selection to add and delete tabs and to rearrange the order in which tabs display in the measurement report for the selected exam type.

To	Do this
Add tabs to a report	1. Select a tab from the **Selectable Report Tab Order** list. 2. Click **Add**. The tab is relocated to the bottom of the **Report Tab Order** list.
Delete tabs from a report	**Note:** You cannot delete the last tab in the **Report Tab Order** section. 1. Select a tab in the **Report Tab Order** list. 2. Click **Delete**. The tab is relocated to the bottom of the **Selectable Report Tab Order** list.
Rearrange tabs on a report	1. Select a tab in the **Report Tab Order** list. 2. Click **Move Up** or **Move Down**. The selection moves up or down one position in the list.

M & R Configuration 2 — Configuration Selections

The **M & R Configuration 2** item on the **Presets** screen provides the following selections:

Selection	Option(s)	Allows you to...
Heart Rate Tool	---	---
Number of Heart Cycles for Heart Rate	**1**, **2**, **3**, **4**, **5**	Select the number of heart cycles.

Summary — Configuration Selections

The **Summary** item on the **Presets** screen provides the following selections.

Selection	Option(s)	Allows you to...
Site Information	---	---
Logo	on, off	Insert an image in the **Letter Header** section.
Load	---	Select an image from the USB-compatible device.
Delete	---	Delete the selected image.
Text 1	(text entry)	Enter text to display in the **Letter Header** section.
Text 2	(text entry)	Enter text to display in the **Letter Header** section.
Text 3	(text entry)	Enter text to display in the **Letter Header** section.
Font	---	Access a dialog box to customize the display of text (for example, type, style, or size).
Display Items for Summary		
Images	**On**, **Off**	Enable or disable the **Images** section on the **Summary**.
Summary	**On**, **Off**	Enable or disable the **Summary** section on the **Summary**.
Recommendations	**On**, **Off**	Enable or disable the **Recommendations** section on the **Summary**.
Signature	**On**, **Off**	Enable or disable the **Signature** section on the **Summary**.

To modify the Letter Header of the Summary:

- Press the **Presets** key on the keyboard and then select **Summary** on the left of the screen.

To	Do this
Insert an image for inclusion on the summary	1. Select **Load** from the **Logo** section. The system displays a list of compatible images located in the root directory of the inserted USB-compatible storage device. 2. Select an image. The system displays the image in the **Logo** section.
Delete the image	▪ Select **Delete** from the **Logo** section.
Display customized text in the summary header	▪ Use the keyboard to enter text in the text box.
Modify the font type, style, or size	1. Select the **Font** button. 2. Select the required format and then select **OK**.

Service — Serviceability Selections

This selection provides the system serial number and software version number, along with password-protected service protocols. The service function allows service personnel to confirm the correct operation of the system. Exiting the Service function returns the system to imaging.

Note: Text in the **Siemens Service Software** screen is displayed in English only.

Note: When you select **Restore Factory Defaults** from the **Siemens Service Software** screen, the system restores the initial factory default settings for all values except Language and Video Format.

Stress Echo — Options Selections

The **Stress Echo** menu item in the system presets displays the **Maintenance** dialog box, which allows you to configure options for the optional Stress Echo feature. Options determine system behavior during acquisition, appearance of loops in the Stress Echo screen, placement of WMS (wall-motion scoring) graphics relative to the loops they represent, type of line used for creating traces, lengths of systolic duration for specific heart rates, and available protocols.

Exiting (quitting) the Stress Echo presets screen returns the system to imaging.

The Stress Echo chapter describes the setup options in detail.

See also: Stress Echo, Chapter A9, Features and Applications Reference

SieScape — Options Selections

The **SieScape** item on the **Presets** screen provides the following selections:

Selection	Option(s)	Allows you to...
SieScape Scale	**On** **Off**	Automatically display a ruler along a frozen SieScape image.
SieScape Size	**Best Fit**, **1**, **2**, **3**, **Full Size**	Determine the scale of the SieScape image when frozen. **Best Fit** automatically scales the image to fit the window, based on the selected rotation. **Best Fit** is the default image size. **1**–**3** incrementally scales the image size between **Best Fit** and **Full Size**. **Full Size** displays the full (actual) size of the image in the image area.

DICOM — Options Selections

You can configure the ultrasound system and connected devices (such as servers and printers) for DICOM by creating, editing, and activating aliases (DICOM configurations).

The DICOM chapter describes the setup options in detail.

See also: DICOM Connectivity Option, Chapter 6, System Reference

DIMAQ Utility — Options Selections

The **DIMAQ Utility** Item on the **Presets** screen provides access to setup options for the DIMAQ integrated workstation.

See also: Patient Data Management, Chapter C1, Features and Applications Reference

Selection	Option(s)	Description
Thumbnails		
Enable	on, off	Enables the display of panels on the screen (for example, Thumbnails and Patient Info).
Active Panel	**PatientInfo** **Thumbnails**	Displays the selected panel on the first page of the panel section.
Columns	**1**, **2**, **3**, **4**	Selects the number of columns displayed in the Thumbnail screen.
Rows	**4** through **12**	Selects the number of rows displayed in the Thumbnail screen.
Printer	**None** **DICOM Print, BW** **DICOM Print, Color** **PC Printer** **USB BW Printer** **USB Color Printer**	Selects the type of printer or storage device. **Note:** The **PC Printer**, **USB BW Printer**, or **USB Color Printer** options are available when a corresponding printer is assigned using the **Printer** item on the **Presets** screen.

Clip Capture — Options Selections

The **Clip Capture** item on the **Presets** screen provides the following selections:

Selection	Option(s)	Description
Compression	**Low (8:1)** **High (13:1)**	Select level of image resolution and file size.
Trigger Type	**Time Capture** **Beat Capture** **R-Wave Only Capture**	Select clip capture over a period of seconds or heart beat cycles.
Chronology	**Prospective** **Retrospective**	**Retrospective** selects a clip of previous images. **Prospective** selects a clip of succeeding images.
Time Trigger	**1**, **2**, **3**, **4**, **8***, **60***, **120***, (user-defined)*	(Available when **Time Capture** is selected for **Trigger Type**.) Specify the duration of each clip in seconds.
Beat Trigger	**1**, **2**, **3**, **4**, **8***, **60***, **120***, (user-defined)*	(Available when **Beat Capture** is selected for **Trigger Type**.) Specify the duration of each clip in heart beat cycles.
R-Wave Delay	**0** to **480** in steps of 30 msec	(Available when **Beat Capture** is selected for **Trigger Type**.) Set the capture point based on a delay beyond the R-Wave.
Acquisition Rate	**normal** **high**	Defines the frame rate of the acquisition.

* Available when **Prospective** is selected for **Chronology**.

Network Export — Options Selections

You can verify selection of an existing setup, select another setup, edit an existing setup, or create a new setup for the host or export host using the system presets on the ultrasound system.

The Network Export Function chapter describes the setup options in detail.

See also: Network Export Function, Chapter 4, System Reference

Authorization

The **Authorization** item on the **Presets** screen provides access to security options.

When you access the **Authorization** screen for the first time, the system prompts you to set up the administrator account.

Note: To change these selections, you must log in with an administrator account, unless otherwise noted.

Selection	Option(s)	Description
Change Password	---	---
Change	---	Displays a dialog box for changing your current password. **Note:** This selection is available for all user accounts.
Administration	---	---
Password	---	Displays a login dialog box for an administrator.

Selection	Option(s)	Description
Accounts	---	---
(user defined entries)	---	Displays the defined user accounts when you log in to this screen as an administrator. You can change the settings for the selected user account.
Administrator	on, off	When enabled (selected), assigns administrator privileges to the selected user account.
Disabled	on, off	When enabled (selected), disables the selected user account. **Note:** Use this selection to reactivate a disabled user account.
Reset…	---	Displays a dialog box to reset the password for the selected user account.
Delete	---	Deletes the selected user account.
New	---	Displays a dialog box to create a new user account.
CD / DVD	---	---
Import	---	Retrieves user accounts and passwords from disk media.
Export	---	Saves user accounts and passwords to disk media.
Authorization Policy	---	---
Login Required	on, off	When enabled (selected), requires a user account and password to access the DIMAQ integrated workstation. Selecting this option allows you to configure the **Authorization Policy** section. When disabled (cleared) allows all users access to the DIMAQ integrated workstation without requiring a password.
Retry Limits **Retry Period**	on, off	When enabled (selected), causes the user account to be disabled if login attempts exceed the specified limit. An administrator must reactivate the user account. **Note:** The retry limit does not apply to administrator accounts.
Attempts	**1** to **100** attempts in increments of 1	Specifies the number of login attempts allowed before the system disables the user account.
Seconds	**1** to **5** seconds in increments of 1 second	Specifies the interval of time before allowing the next login attempt.
Autologout (Screen Saver)	on, off	When enabled (selected), automatically logs out after the user account is inactive for the specified interval of time.
Password Expire	on, off	When enabled (selected), requires users to change passwords after the specified expiration period.
Days	**1** to **1,000** days in increments of 1 day	Specifies the expiration period for a password.
Password Policy	on, off	When selected (enabled), requires new passwords to conform to specified password security restrictions.
Minimum Characters	0 to 64 characters in increments of 1	Specifies the minimum number of characters a password must contain.
Lowercase Characters	0 to 64 characters in increments of 1	Specifies the minimum number of lowercase characters a password must contain.

Selection	Option(s)	Description
Special Characters	**0** to **64** characters in increments of 1	Specifies the minimum number of special characters a password must contain.
Uppercase Characters	**0** to **64** characters in increments of 1	Specifies the minimum number of uppercase characters a password must contain.
Numeric Characters	**0** to **64** characters in increments of 1	Specifies the minimum number of numeric characters a password must contain.
Login Screen Message	---	---
Change	---	Allows you to use the keyboard to customize the login message for the DIMAQ integrated workstation.

Archive

The **Archive** item on the **Presets** screen provides the following options:

Selection	Option(s)	Description
General	---	---
Study Archive History Deletion Policy	**Always Delete Study Archive History When Study is Deleted** **Allow Delete Study Archive History after Study is Deleted** **No Delete of Study Archive History**	Select how the study archive is maintained after the study is deleted.
Show Deleted Studies in Study Screen	on, off	Select this check box to display the studies deleted from the system in the DIMAQ integrated workstation's Study screen.
CD / DVD	---	---
Burn Showcase to DICOM CD / DVD	on, off	Enable or disable automatic storage of the DICOM viewer software program with DICOM-formatted data archived to disk media.

Printer — Options Selections

The **Printer** item on the **Presets** screen provides access to setup options for installing and configuring printers.

Selection	Option(s)	Description
Printer	---	---
Install	---	Installs a USB printer.
Status	---	Shows the status of the most recently assigned printer.
PC Printer	(drop-down list)	Lists the installed USB printers.
USB BW Printer	(drop-down list)	Lists the installed USB printers.
USB Color Printer	(drop-down list)	Lists the installed USB printers.

Note: To ensure images print correctly, select the name of the USB printer corresponding to each installed printer from the drop-down list.

Customizing OB and Early OB Measurements, Calculations, and Reports

The Measurement and Report Presets for the OB and Early OB exams include generic and exam-specific descriptions.

Measurement and Report Preset	Description
Item & Reference Selection, Standard OB	See page 1-35
Item & Reference Selection, Early OB	See page 1-37
Display Item, Standard OB / Early OB	See page 1-37
Growth Analysis Graphs, OB and Early OB	See page 1-38
Standard OB / Early OB User-Defined Formulas: EFW Formula, MA Data, GA Data, Ratio Formula	See page 1-39
Standard OB / Early OB User-Defined Tables: MA Data and GA Data	See page 1-41
User-Defined Label	See page 1-44
Measurement Method	See page 1-22
Customize Keys	See page 1-23
General Configuration	See page 1-24
Comments Library for Report	See page 1-28

Item & Reference Selection, Standard OB

2D-Mode, M-Mode, Doppler, Ratio, and Growth Analysis Tabs

This selection allows you to edit the Measurement Item list for 2D-mode, M-mode, Doppler, ratios, and Growth Analysis.

To add or delete measurement items:

1. To add a measurement item, roll the trackball to an item in the **Selectable Label** list and then press the **SET** key.
2. Roll the trackball to the **Add** button and then press the **SET** key.

   The item is placed at the end of the **Measurement Item** list.
3. To delete a measurement item, roll the trackball to an item in the **Measurement Item** list and then press the **SET** key.
4. Roll the trackball to the **Delete** button and then press the **SET** key.

   The item is placed at the end of the **Selectable Label** list. Any author assignment to the item is retained.

To assign an author to a measurement item:

Note: For 2D-mode, M-mode, ratio, and Growth Analysis only.

1. Roll the trackball to the **Author** field to the right of the **Measurement Item** and then press the **SET** key. If the field is blank, no selections are available.
2. Roll the trackball to highlight an author and then press the **SET** key.

   The author is now assigned to the measurement item.

To add all selectable labels assigned to the same author:

Note: For 2D-mode, ratio and Growth Analysis only.

1. Under **Same Author Label All Selection**, roll the trackball to the unlabeled text box and then press the **SET** key.
2. Roll the trackball to highlight an author and then press the **SET** key.
3. Roll the trackball to the **Add** button and then press the **SET** key.

   All selectable labels assigned to this author are added to the **Measurement Item** list.

To move between pages of measurement items:

Note: For 2D-mode only.

1. Roll the trackball to the **Next** button and then press the **SET** key to access a higher page number.
2. Roll the trackball to the **Prev** button and then press the **SET** key to access a lower page number.

To select display of single or averaged measurements:

Note: This task cannot be performed with the **Ratio** and **Growth Analysis** tab.

1. For each measurement item, roll the trackball to the **Average** button (to display an average of all measurements) or the **Direct** button (to display the last measurement) and then press the **SET** key.
2. To change all measurement items on the same page, roll the trackball to the **Average** or **Direct** button in the **Same Parameter Selection All Label** section and then press the **SET** key.
3. Access each page of Measurement Items and repeat step 1 or 2.

To reset the Measurement Item list:

- Roll the trackball to the **Default** button and then press the **SET** key. Select **Yes** in the displayed confirmation message.

  All measurement items and author assignments are returned to factory default settings.

EFW / USMA Tab

Use this tab to select preferred authors for two EFW formulas. Both formulas display in the worksheet and the report. The EFW1 formula displays in the Measured Results when the required measurements have been made. You can also select an average USMA to be returned as measurements are made or specify that one of Hadlock's eleven regression equations be used.

For EFW1, EFW2, and USMA selections, the required measurements are listed in the associated Based Label box.

To make an EFW or USMA selection:

1. Roll the trackball to the appropriate **Author** field and then press the **SET** key.

   The system displays a pull-down menu of available authors or equations.

2. Roll the trackball to highlight an author or equation and then press the **SET** key.

Item & Reference Selection, Early OB

The Item & Reference Selections for Early OB parallel those for Standard OB. The **Ratio** tab has no system-defined ratios, but shares five user-defined ratio labels with Standard OB. The **EFW / USMA** tab is the same as for Standard OB.

Display Item, Standard OB / Early OB

The Standard OB / Early OB **Display Item** screen allows you to designate items to include on the measurement screen and in the worksheet and patient report.

Selection	Option(s)	Allows you to...
Measurement Screen	---	---
Abbreviated Display of Results	on, off	Select this check box to display only labels with assigned measurement values in the Measured Results. De-select the check box to display all labels on the Measurement Menu in the Measured Results.
Vertical Display of Doppler Measurement Results	**Systole** **Diastole** **S / D** **RI** **PI**	Select each check box to display the selection as a permanent, labeled item in the Measured Results for Doppler. De-select the check box to not display the selection in the Measured Results.
Report / Worksheet	---	---
Abbreviated Display of Results	on, off	Select this check box to display only labels with assigned measurement values in the Measured Results. De-select the check box to display all labels on the Measurement Menu in the Measured Results.
Display of Doppler Measurement Results	**Systole** **Diastole** **S / D** **RI** **PI**	Select each check box to display the selection as an item in the Doppler section of the report. De-select the check box to not display the selection in the Doppler section of the report.
Performing MD	on, off	Select this check box to include at the bottom of the report page the Performing MD entered in the patient data form.
Referring MD	on, off	Select this check box to include at the bottom of the report page the Referring MD name entered in the patient data form.

Selection	Option(s)	Allows you to...
HC / AC Measurement	---	---
HC with BPD / OFD Measurement	on, off	Automatically derive values for BPD and OFD from the HC Measurement.
AC with ATD / ASD Measurement	on, off	Automatically derive values for ATD and ASD from the AC Measurement.
Display SD / Growth Percentile	---	---
Display SD / Growth Percentile	**ON** **OFF**	Enable the display of a standard deviation for each measurement: **ON** — Displays the standard deviation (SD). **OFF** — Displays the gestational age (GA) instead of the SD.
Caution of estimated age	**OFF** **1.5SD** **2.0SD** **2.5SD** **3.0SD**	Specify the upper limit of the range for the standard deviation (SD).

Growth Analysis Graphs, OB and Early OB

Use this selection to set up growth curves for OB and Early OB exams.

Selection	Option(s)	Allows you to...
Link Files	**Manual** **Automatic**	Link files in the measurement report manually or automatically.
Customize Growth Analysis Graphs	---	---
Graph Format	**Single** **Quad**	Select **Single** to display one graph to a patient report page. Select **Quad** to display four graphs to a page. With either option, each graph displays the growth curve for a different, user-selectable growth parameter according to a user-selectable reference (author).
Graph Display	**Current** **Previous**	Select **Current** to display measurement values from the current exam only. Select **Previous** to display values from prior OB exams. **Previous** requires that the exams are available on the hard drive or CD/DVD and are linked to the current study. Select both check boxes to plot current measured results with previous measurements for a parameter on a single graph.
Graph Grid	on, off	Display vertical and horizontal lines on the graph.
Display All Measured Label	on, off	Select this check box to display all measurement values from the current exam on the **Obstetrical Growth Curve Graph** page of the patient report when **Single** is selected. De-select this check box to display only the selected measurement value.

Standard OB / Early OB User-Defined Formulas

Access a Standard OB / Early OB formula with one of the following selections from the Standard OB or Early OB Measurement and Report screen:

- **User-Defined EFW Formula**
- **User-Defined MA Data**
- **User-Defined GA Data**
- **User-Defined Ratio Formula**

To access a formula screen:

1. Roll the trackball to any of these choices and then press the **SET** key.
2. If the system displays a confirmation window, roll the trackball to the **OK** button and then press the **SET** key.
3. For MA Data and GA Data, roll the trackball to the **Formula** button under **Data Type** and then press the **SET** key.

The resulting formula screens are very similar. Basic formula-building rules apply to EFW, Ratio, MA Data, and GA Data formulas. Use the following procedure for all four formula types.

To create a user-defined formula:

1. Roll the trackball to the drop-down box at the upper left corner and then press the **SET** key.

   The system displays a list of numbered User-Defined formulas.

2. Roll the trackball to highlight one of the User-Defined formula numbers and then press the **SET** key.
3. In the MA Data and GA Data screens, roll the trackball to the **Known Variable Label** field and then press the **SET** key. In the Ratio Formula screen, roll the trackball to the **Label Name** field and then press the **SET** key.

   The system displays a list of labels.

4. For these three screens, roll the trackball to highlight a label and then press the **SET** key.
5. For all screens, roll the trackball to the **Reference (Author)** field and then press the **SET** key.
6. Roll the trackball to highlight an author or use the keyboard to enter the name of an author and then press the **SET** key.
7. For all screens, roll the trackball to the first field in the **Range** section and then press the **SET** key.

   Note: The **Range** section is not available for the MA Data screen when you select the Formula button under Data Type.

8. For the GA Data screen, enter the lower limit for the measurement range in millimeters and then use the trackball and **SET** key to move the cursor to enter millimeters for the upper limit.

9. For all screens, use the trackball and **SET** key to advance to the date area.
10. Using the trackball and **SET** key between boxes, enter the week and day for the lower limit for the age range in the boxes at the left and the week and day for the upper limit in the boxes at the right.
11. For a Ratio formula screen, enter the minimum and maximum values for the ratio between the parentheses.
12. In the GA Data formula screen, roll the trackball to the **SD Type** field and then press the **SET** key.

    A list of standard deviation types displays.
13. Roll the trackball to highlight one of the SD types and then press the **SET** key.
14. In the Result Unit section of the MA Data formula screen, roll the trackball to the **Days** button for a standard deviations formula or the **Weeks** button for a standard formula and then press the **SET** key.
15. For MA Data, GA Data, and EFW formula screens, roll the trackball to the upper right corner to select a conventional formula or a standard deviation limits formula.
16. Enter your formula in the field to the right of the equals sign (=). Use the keyboard to enter numbers and any of the operators listed in the **Operation** box at the bottom of the screen. Use the trackball and the **SET** key to select constants (see below) and variables (or values). Example: "A"*"LOG"("BPD") + "COS"("ATD") - 1.8327

    Note: You can use parentheses, but do not use spaces to separate elements in your formula. Do not delete any of the quote marks entered by the system. You can enter up to 64 characters in this field. To conserve space, you can assign a letter value to a constant and enter the letter into your formula instead of the full constant.

To define a constant for a user-defined formula:

Constant	
Label	**Value**
A	1.118303
B	

1. Roll the trackball to the **Value** column parallel with the label letter to which you want to assign the value and then press the **SET** key.

   The system displays an entry field next to the label letter.
2. Enter a numeric value of up to 60 characters, including a decimal point if required and then press the **Enter** key on the keyboard.
3. To insert a constant into a formula, roll the trackball to position the pointer on the appropriate letter in the **Label** column and then press the **SET** key.

   The system inserts the label letter into the formula.

To delete a user-defined formula:

1. Roll the trackball to highlight one of the **User-Defined** numbers in the upper left of the screen.
2. Roll the trackball to the **Delete Current Reference** button and then press the **SET** key.

To exit a user-defined formula screen:

1. To exit and save the formula, roll the trackball to the **Save** button and then press the **SET** key.

   The system informs you if there is a syntax or other error in the formula. If necessary, resolve the problem and exit again.

2. To exit and not save the formula, roll the trackball to the **Previous** button and then press the **SET** key.

   The system queries you to save changes by selecting **Yes** or discard changes by selecting **No**.

Standard OB / Early OB User-Defined Tables

Access a Standard OB / Early OB table with one of the following selections from the Standard OB or Early OB Measurement and Report screen:

- **User-Defined MA Data**
- **User-Defined GA Data**

To access a table screen:

1. Roll the trackball to one of these choices and then press the **SET** key.
2. If the system displays a confirmation window, roll the trackball to the **OK** button and then press the **SET** key.
3. Roll the trackball to the **Table** button under **Data Type** and then press the **SET** key.

The resulting table screens are very similar for MA Data and GA Data. Basic table-building rules apply to both types. Use the following procedure for both table types.

To create a user-defined table:

1. Roll the trackball to the drop-down box at the upper left corner and then press the **SET** key.

   The system displays a list of numbered User-Defined tables.

2. Roll the trackball to highlight one of the User-Defined table numbers and then press the **SET** key.
3. Roll the trackball to the **Known Variable Label** field and then press the **SET** key.

   The system displays a list of labels.

4. Roll the trackball to highlight a label and then press the **SET** key.
5. Roll the trackball to the **Reference (Author)** field and then press the **SET** key.
6. Roll the trackball to highlight an author or use the keyboard to enter the name of an author and then press the **SET** key.
7. Roll the trackball to the first field in the **Range** section and then press the **SET** key.
8. Enter the lower limit for the measurement range in millimeters and then use the trackball and **SET** key to move the cursor and enter the upper limit.
9. Use the trackball and **SET** key to advance to the date area.
10. Using the trackball and **SET** key to move between boxes, enter the week and day for the lower limit for the age range in the boxes at the left and the week and day for the upper limit in the boxes at the right.
11. In the GA Data table screen, roll the trackball to the **SD Type** field and then press the **SET** key.

    A list of standard deviation types displays.

12. Roll the trackball to highlight one of the SD types and then press the **SET** key.
13. In the MA Data table screen, your result units of weeks and days are built into the table, so leave the default selection for the **Result Unit** field.
14. Create your table in the box. Use the trackball and **SET** key to move to each new field. Create additional lines by using the scroll bar.

    The first line should contain the lower limit for the variable value and the week and day for the lower limit of the date range. The last line should contain the upper limits. The table must contain an entry for every variable value between the upper and lower limits in order for the system to display a measured value in the worksheet and the patient report. For example, if you specify a range from 10.0 to 11.0, you must create a line entry for 10.0, 10.1, 10.2...11.0. If you only create entries for 10.0, 10.2, 10.4...11.0, a measured value of 10.3 will not display.

    Note: Measurements corresponding to table values that are outside the range will not be recognized. A measurement that is within the range but less than the lowest table value will only provide an MA or GA value equivalent to the lowest value. A measurement that is within the range but greater than the highest table value will only provide an MA or GA value equivalent to the highest value.

15. In the **Value** field, enter the size in mm that indicates a specific age.
16. In the **Weeks and Days** field, enter the age.
17. For MA tables, enter a number in the **SD Limits** field. The system converts the number to days for you, such as +/- 2 d.

    For GA tables, enter lower and upper limits for the value in the **Lo Limit** and **Up Limit** fields.
18. To clear contents of a cell in the table, position the cursor in the cell and then select the **Clear Cell** button.
19. To clear contents of an entire line in the table, position the cursor in the line and then select the **Clear Line** button.
20. To undo the most recent change in the table, select the **Undo** button.

To delete a user-defined table:

1. Roll the trackball to highlight one of the user-defined numbers in the upper left of the screen.
2. Roll the trackball to the **Delete Current Reference** button and then press the **SET** key.

To exit a user-defined table screen:

1. To exit and save the table, roll the trackball to the **Save** button and then press the **SET** key.

   The system informs you if there is an error in the table. Resolve the problem and exit again.
2. To exit and not save the table, roll the trackball to the **Previous** button and then press the **SET** key.

   The system queries you to save changes by selecting **Yes** or discard changes by selecting **No**.

User-Defined Label, OB and Early OB

The OB and Early OB exams share five user-defined labels for 2D-mode and another five user-defined labels for Doppler. Access a user-defined label by selecting **User-Defined Label** from the **Standard OB** or **Early OB Measurement and Report** screen.

To create a user-defined label:

1. Roll the trackball to the drop-down menu at the upper left corner of the 2D-mode or Doppler section on the **User Defined Label** screen and then press the **SET** key.

   A list of five user-defined numbers displays.

2. Roll the trackball to highlight one of the user-defined numbers and then press the **SET** key.
3. Roll the trackball to the **Label Name** field and then press the **SET** key.
4. Use the keyboard to type in a label name of up to eight characters.
5. For 2D-mode labels, roll the trackball to the **Measurement Method** field and then press the **SET** key.

   A list of measurement methods displays.

6. Roll the trackball to highlight a method and then press the **SET** key.

   The system assigns the appropriate unit of measure for the method.

7. For additional 2D-mode labels, repeat steps 2 through 6.
8. For Doppler labels, use steps 2 through 4 as required.

To delete a user-defined label:

1. Roll the trackball to the drop-down menu at the upper left corner of the 2D-mode or Doppler section on the **User Defined Label** screen and then press the **SET** key.

   A list of five user-defined numbers displays.

2. Roll the trackball to highlight one of the user-defined numbers and then press the **SET** key.
3. Roll the trackball to the **Delete Current 2D-Mode Label** or the **Delete Current Doppler Label** button and then press the **SET** key.

Customizing Vascular Measurements, Calculations, and Reports

The Measurement and Report Presets for the C-Vascular, P-Vascular, and Venous exams include exam-specific descriptions for Display Item.

Display Item — Cerebrovascular (C-Vascular)

Selection	Option(s)	Allows you to…
Measurement Screen	---	---
Abbreviated Display of Results	on, off	Select this check box to display only labels with assigned measurement values in the Measured Results. De-select the check box to display all labels on the Measurement Menu in the Measured Results.
Vertical Display of Doppler Measurement Results	**Systole** **Diastole** **S / D** **RI** **PI**	Select each check box to display the selection as a permanent, labeled item in the Measured Results for Doppler. De-select the check box to not display the selection in the Measured Results.
Report	---	---
Abbreviated Display of Results	on, off	Select this check box to display only labels with assigned measurement values in the Measured Results. De-select the check box to display all labels on the Measurement Menu in the Measured Results.
Display of Measurement Results	**%Stenosis** **Systole** **Diastole** **S / D** **RI** **PI**	Select each check box to display the selection as an item in the Doppler section of the report. De-select a check box to not display a selection in the Doppler section of the report.
Calculation Label Display	**ICA / CCA(S)** **ICA / CCA(D)**	Specify calculated ratios to display in the report.
Performing MD	on, off	Select this check box to include at the bottom of the report page the Performing MD entered in the Patient Data form.
Referring MD	on, off	Select this check box to include at the bottom of the report page the Referring MD name entered in the Patient Data form.

Display Item — Peripheral Vascular (P-Vascular)

Selection	Option(s)	Allows you to…
Measurement Screen	---	---
Abbreviated Display of Results	on, off	Select this check box to display only labels with assigned measurement values in the Measured Results. De-select the check box to display all labels on the Measurement Menu in the Measured Results.
Vertical Display of Doppler Measurement Results	**Peak Systole** **RI** **PI**	Select each check box to display the selection as a permanent, labeled item in the Measured Results for Doppler. De-select the check box to not display the selection in the Measured Results.
Report	---	---
Abbreviated Display of Results	on, off	Select this check box to display only labels with assigned measurement values in the Measured Results. De-select the check box to display all labels on the Measurement Menu in the Measured Results.
Display of Measurement Results	**Peak Systole** **RI** **PI**	Select each check box to display the selection as an item in the Doppler section of the report. De-select a check box to not display a selection in the Doppler section of the report.
Performing MD	on, off	Select this check box to include at the bottom of the report page the Performing MD entered in the patient data form.
Referring MD	on, off	Select this check box to include at the bottom of the report page the Referring MD name entered in the Patient Data form.

Display Item — Venous

The **Display Item** screen for the Venous exam presents two columns of entries: **Selectable Label** on the left and **Report Label Order** on the right. Add labels from left to right, or delete labels from right to left.

To add labels:

1. Roll the trackball to a selectable label on the left and then press the **SET** key.

   The system highlights the label.

2. Roll the trackball to the **Add** button and then press the **SET** key.

   The system moves the label to the bottom of the **Report Label Order** list on the right.

To delete labels:

1. Roll the trackball to a label in the **Report Label Order** list on the right and then press the **SET** key.

   The system highlights the label.

2. Roll the trackball to the Delete button and then press the **SET** key.

   The system moves the label to the bottom of the **Selectable Label** list on the left.

To rearrange labels:

1. Roll the trackball to one of the labels in the **Report Label Order** list on the right and then press the **SET** key.

   The system highlights the label.

2. Roll the trackball to the **Move Up** or **Move Down** button and then press the **SET** key.

   The system moves the label up or down one space in the list.

3. Repeat steps 1 and 2 as required to create a restructured **Report Label Order** list.

To reset labels back to factory default positions:

1. Roll the trackball to the **Default** button and then press the **SET** key.

   The system prompts you to confirm your choice.

2. Roll the trackball to the **OK** button and then press the **SET** key to continue.

The **Display Item** screen for the Venous exam also provides the following selections:

Selection	Option(s)	Allows you to...
Performing MD	on, off	Select this check box to include at the bottom of the report page the Performing MD entered in the Patient Data form.
Referring MD	on, off	Select this check box to include at the bottom of the report page the Referring MD name entered in the Patient Data form.

Customizing Gynecology Measurements, Calculations, and Reports

The **Measurement and Report Preset** for the Gynecology exam includes exam-specific descriptions for **Display Item**.

Display Item — Gynecology

The Gynecology **Display Item** allows you to designate items to include on the measurement screen and in the patient report.

Selection	Option(s)	Allows you to...
Measurement Screen	---	---
Abbreviated Display of Results	on, off	Select this check box to display only labels with assigned measurement values in the Measured Results. De-select the check box to display all labels on the Measurement Menu in the Measured Results.
Vertical Display of Doppler Measurement Results	**Systole** **Diastole** **S / D** **RI** **PI**	Select each check box to display the selection as a permanent, labeled item in the Measured Results for Doppler. De-select the check box to not display the selection in the Measured Results.

Selection	Option(s)	Allows you to...
Enable Early OB Caliper	on, off	Select this check box to display the **Early OB** measurement labels in the Measurement Menu.
Report	---	---
Abbreviated Display of Results	on, off	Select this check box to display only labels with assigned measurement values in the Measured Results. De-select the check box to display all labels on the Measurement Menu in the Measured Results.
Display of Doppler Measurement Results	**Systole** **Diastole** **S / D** **RI** **PI**	Select each check box to display the selection as an item in the Doppler section of the report. De-select a check box to not display a selection in the Doppler section of the report.
Performing MD	on, off	Select this check box to include at the bottom of the report page the Performing MD entered in the Patient Data form.
Referring MD	on, off	Select this check box to include at the bottom of the report page the Referring MD name entered in the Patient Data form.

Customizing Cardiac Measurements, Calculations, and Reports

Note: You can also customize the measurements and calculations for use with the **Ped Echo** exam. The customization of the **Ped Echo** exam is independent of the customization of the **Cardiac** exam.

The **Measurement and Report Preset** for the Cardiac exam includes generic and exam-specific descriptions.

Measurement and Report Preset	Description
Measurement Method	See page 1-22
Customize Keys	See page 1-23
General Configuration	See page 1-24
Measurement Order	See page 1-49
Display Item	See page 1-51
User-Defined Label	See page 1-52
Comments Library for Report	See page 1-28

Measurement Order — Cardiac

Use the **Heading** tab to select and reorder headings (measurement types).

Note: Only the measurement types in the **Measurement Order** list on the **Heading** tab display on the **Display Item** screen.

Use the **Label** tab to further customize the contents (available labels) for each heading.

Heading Tab

Note: Only the Measurement types in the **Measurement Order** list on the **Heading** tab display in the **Heading** field on the **Label** tab.

To	Do this
Add a heading	1. Select the required imaging mode from the **Mode** drop-down list. 2. Select a measurement type from the **Selectable Heading** list. 3. Click **Add**. The selection is relocated to the bottom of the **Measurement Order** list.
Delete a heading	1. Select the required imaging mode from the **Mode** drop-down list, 2. Select a measurement type from the **Measurement Order** list. 3. Click **Delete**. The selection is relocated to the bottom of the **Selectable Heading** list.
Rearrange headings	1. Select the required imaging mode from the **Mode** drop-down list. 2. Select a measurement type from the **Measurement Order** list. 3. Click **Move Up** or **Move Down**. The selection moves up or down one position in the list.

Label Tab

The **Label** tab allows you to customize measurement order for guided and non-guided Cardiac measurements.

Customizing Guided Measurements

The Cubed, Teichholz, and Gibson selections are guided measurements for assessing left ventricular function.

The guided measurements present workflow patterns. Each pattern dictates a sequence of measurements. Select a pattern that best matches your workflow. Pattern 1 for each of the three guided measurement types includes all measurement labels. These measurements appear in the **Measurement Order** column on the right. Other patterns present the same sequence but with fewer measurements. Measurements not included in a pattern are listed in the **Selectable Label** column on the left. Measurements cannot be added, deleted, or rearranged for patterns.

To select a pattern for a Cardiac guided measurement type:

Note: Only the measurement types in the **Measurement Order** list on the **Heading** tab display in the **Heading** field on the **Label** tab.

1. Select the **Label** tab.
2. Select a measurement type from the **Heading** field.
   - **Cubed(2D)**
   - **Teichholz(2D)**
   - **Gibson(2D)**
   - **LV/Cubed(M)**
   - **LV/Teich(M)**
   - **LV/Gibson(M)**
3. Select a sequence of measurements (pattern) from the **Pattern** field.

   The **Measurement Order** column displays the required measurement labels and the order of display for the selected pattern.
4. Click **Save**.

Customizing Non-Guided Measurements

Note: Only the measurement types in the **Measurement Order** list on the **Heading** tab display in the **Heading** field on the **Label** tab.

To	Do this
Add a label	1. Select the **Label** tab. 2. Select a measurement type from the **Heading** drop-down list. 3. Select a label from the **Selectable Label** list. 4. Click **Add**. The label is relocated to the bottom of the **Measurement Order** list.
Delete a label	1. Select the **Label** tab. 2. Select a measurement type from the **Heading** drop-down list. 3. Select a label from the **Measurement Order** list. 4. Click **Add**. The label is relocated to the bottom of the **Selectable Label** list.
Rearrange labels	1. Select the **Label** tab. 2. Select a measurement type from the **Heading** drop-down list. 3. Select a label from the **Measurement Order** list. 4. Click **Move Up** or **Move Down**. The label moves up or down one position in the list.

Display Item — Cardiac

Note: You can also customize the measurements and calculations for use with the **Ped Echo** exam. The customization of the **Ped Echo** exam is independent of the customization of the **Cardiac** exam.

The Cardiac **Display Item** allows you to designate items to include on the measurement screen and in the patient report.

Selection	Option(s)	Allows you to…
General	---	---
Default Measurement Title	**2D-Mode** **M-Mode** **Doppler**	Select which measurement type will be active when an imaging mode is entered. **Note:** Only the measurement types in the **Measurement Order** list on the **Heading** tab display on the **Display Item** screen.
		2D-Mode measurement types: ▪ **None** ▪ **Simpson BP** ▪ **Simpson SP** ▪ **Mod Simpson** ▪ **Single Plane** ▪ **Bi-Plane** ▪ **Bullet** ▪ **Cubed(2D)** ▪ **Teichholz(2D)** ▪ **Gibson(2D)** ▪ **Mitral Valve** ▪ **AV / LA** ▪ **Aortic Valve** ▪ **Pulmonary Valve** ▪ **RV** ▪ **LV** ▪ **PISA(MR)** ▪ **PISA(MS)** ▪ **LV Mass T-E** ▪ **LV Mass A-L** ▪ **LA Vol (A-L)** ▪ **LA Vol (Simp)** ▪ **RA Vol (A-L)** ▪ **RA Vol (Simp)** ▪ **Qp/Qs**
		M-Mode measurement types: ▪ **None** ▪ **LV / Cubed(M)** ▪ **LV / Teich(M)** ▪ **LV / Gibson(M)** ▪ **Mitral Valve(M)** ▪ **AV / LA(M)** ▪ **RV(M)**
		Doppler measurement types: ▪ **None** ▪ **Mitral Valve** ▪ **Aortic Valve** ▪ **Tricuspid Valve** ▪ **Pulmonary Valve** ▪ **Pulmonary Vein** ▪ **AR** ▪ **TR** ▪ **PR** ▪ **MR** ▪ **PISA(MR)** ▪ **PISA(MS)** ▪ **DTI** ▪ **Qp/Qs** ▪ **Tei Index**
Data Averaging	**Direct** **Average**	Specify whether to display the last measurement or an average of all the measurements.
HR Measurement Method	**ECG** **Doppler / M-mode**	Select the method for measuring heart rate.

Selection	Option(s)	Allows you to…
Display of Measurement Labels	**Measurement Type Last Used**	Activate either the last-used measurement type or the system-default measurement type when you exit and then re-enter the measurement function during a Cardiac, Ped Echo, or TEE exam.
Display AOLA	---	---
AO/LA	on, off	Enable display of the label.
LA/AO	on, off	Enable display of the label.
Default RAP	**0mmHg** **5mmHg** **10mmHg** **15mmHg** **20mmHg** **25mmHg**	Select the default value for the Right Atrial Pressure (RAP) in the Measurement Menu. You can change the value when the Cardiac measurement function is active.
Report	---	---
Performing MD	on, off	Select this check box to include at the bottom of the report page the Performing MD entered in the Patient Data form.
Referring MD	on, off	Select this check box to include at the bottom of the report page the Referring MD name entered in the Patient Data form.

User-Defined Label — Cardiac

Note: You can also customize the measurements and calculations for use with the **Ped Echo** exam. The customization of the **Ped Echo** exam is independent of the customization of the **Cardiac** exam.

The Cardiac User-Defined Label item allows you to create up to two measurement types to include on the measurement screen and in the patient report. Each measurement type can have up to six mode-specific measurement labels (up to two labels per imaging mode: 2D-Mode, M-Mode, and Doppler).

Selection	Option(s)	Allows you to…
User-Defined1, **User-Defined2**	---	---
Heading Name	---	Enter up to eight characters to name the user-defined measurement type.
Label	---	---
2D-Mode 1 **2D-Mode 2**	**Distance** **Area** **Disk**	Enter up to three characters to name a 2D-mode measurement label and select the default measurement method.
M-Mode 1 **M-Mode 2**	**Distance** **Time** **Slope**	Enter up to three characters to name an M-mode measurement label and select the default measurement method.
Doppler 1 **Doppler 2**	**Velocity** **Time** **RI** **Acceleration** **PI Trace** **VTI**	Enter up to three characters to name a Doppler measurement label and select the default measurement method.

To access the User-Defined Label screen for Cardiac exams:

1. Press the **Presets** key on the keyboard to display the **Presets** screen and then select **M & R Configuration 1** on the left of the screen.
2. Select **Cardiac** from the drop-down menu in the **Measurement and Report** section of the screen.
3. Select the **User-Defined Label** button.

   The system displays the **User-Defined Label** screen for Cardiac exams.

To create a user-defined Cardiac measurement type:

1. Access the **User-Defined Label** screen for Cardiac exams.
2. Select the **User-Defined 1** tab or the **User-Defined 2** tab.
3. Roll the trackball to the **Heading Name** field and then press the **SET** key on the control panel.
4. Use the keyboard to enter up to eight characters to name the Cardiac measurement type.
5. For each measurement label:
   a. In the **Label** section, roll the trackball to a blank name field for the required imaging mode and then press the **SET** key on the control panel.
   b. Use the keyboard to enter up to three characters to name the measurement label.
   c. Roll the trackball to the drop-down menu located to the right of the name, press the **SET** key to list the mode-specific measurement methods and then use the trackball and **SET** key to select a measurement method.
6. Roll the trackball to the **Save** button at the bottom of the screen and then press the **SET** key on the control panel.

   The system saves the user-defined measurement type.
7. To exit the user-defined label screen, select the **Previous** button.

To delete a user-defined Cardiac measurement type:

1. Access the **User-Defined Label** screen for Cardiac exams.
2. Select the **User-Defined 1** tab or the **User-Defined 2** tab.
3. Roll the trackball to the **Delete Label** button and then press the **SET** key on the control panel.

   The system clears all fields.
4. Roll the trackball to the **Save** button at the bottom of the screen and then press the **SET** key.

   The system deletes the user-defined measurement type.
5. To exit the user-defined label screen, select the **Previous** button.

To delete a measurement label within a user-defined Cardiac measurement type:

1. Access the **User-Defined Label** screen for Cardiac exams.
2. Select the **User-Defined 1** tab or the **User-Defined 2** tab.
3. Roll the trackball to the name of the measurement label and then press the **SET** key on the control panel.
4. Use the backspace key to remove the name of the measurement label.
5. Roll the trackball to the **Save** button at the bottom of the screen and then press the **SET** key.

   The system deletes the measurement label.
6. To exit the user-defined label screen, select the **Previous** button.

Customizing Emergency Medicine Measurements, Calculations, and Reports

The **Measurement and Report Preset** for the Emergency Medicine exam includes generic and exam-specific descriptions.

Measurement and Report Preset	Description
Measurement Method	See page 1-22.
Customize Keys	See page 1-23
General Configuration	See page 1-24
Report Tab	See page 1-29
Calculation Item	See page 1-54.
Display Item	See page 1-26
Comments Library for Report	See page 1-28.

Calculation Item — Emergency Medicine

Use this selection to select a reference author for OB measurement labels and one or two planes for measuring bladder volume.

Selection	Option(s)	Allows you to…
General	---	---
Label	**BPD** **CRL** **GS**	(Listing of measurement labels for assignment of a reference [author].)
Author	(Drop-down menu of authors)	Assign a reference [author] to the corresponding measurement label.
Bladder Volume	---	---
Imaged transversely	on, off	Use measurements from the transverse plane.
Imaged sagitally	on, off	Use measurements from the sagittal plane.

To assign an OB reference author:

1. For each measurement label, roll the trackball to the arrow in the **Author** field and then press the **SET** key.

   The system displays a pull-down menu of reference authors for the measurement label.

2. Roll the trackball to highlight an author and then press the **SET** key.

   The system uses the selected reference author to determine an estimated menstrual age for measured results.

To reset labels back to factory default positions:

1. Roll the trackball to the **Default** button and then press the **SET** key.

   The system prompts you to confirm your choice.

2. Roll the trackball to the **OK** button and then press the **SET** key to continue.

To select planes for the Bladder Volume calculation:

- Roll the trackball to select one or both plane selections and then press the **SET** key.

Customizing Fetal Echo Measurements, Calculations, and Reports

The **Measurement and Report Preset** for the Fetal Echo exam includes exam-specific descriptions for **Display Item**.

Display Item — Fetal Echo

Use this selection to control display of various items on the measurement screen and in the patient report. Also the **Display Item** screen for the Fetal Echo exam presents two columns of entries: **Selectable Label** on the left and **Report Label Order** on the right. Add labels from left to right, or delete labels from right to left.

Selection	Option(s)	Allows you to...
Measurement Screen	---	---
Abbreviated Display of Results	on, off	Select this check box to display only labels with assigned measurement values in the Measured Results. De-select the check box to display all labels on the Measurement Menu in the Measured Results.
Report	---	---
Performing MD	on, off	Select this check box to include the Performing MD entered in the Patient Data form at the bottom of the report page.
Referring MD	on, off	Select this check box to include the Referring MD name entered in the Patient Data form at the bottom of the report page.

To add labels:

1. Roll the trackball to a selectable label on the left and then press the **SET** key.

   The system highlights the label.

2. Roll the trackball to the **Add** button and then press the **SET** key.

   The system moves the label to the bottom of the **Report Label Order** list on the right.

To delete labels:

1. Roll the trackball to a label in the **Report Label Order** list on the right and then press the **SET** key.

   The system highlights the label.

2. Roll the trackball to the Delete button and then press the **SET** key.

   The system moves the label to the bottom of the **Selectable Label** list on the left.

To rearrange labels:

1. Roll the trackball to one of the labels in the **Report Label Order** list on the right and then press the **SET** key.

   The system highlights the label.

2. Roll the trackball to the **Move Up** or **Move Down** button and then press the **SET** key.

   The system moves the label up or down one space in the list.

3. Repeat steps 1 and 2 as required to create a restructured **Report Label Order** list.

To reset labels back to factory default positions:

1. Roll the trackball to the **Default** button and then press the **SET** key.

   The system prompts you to confirm your choice.

2. Roll the trackball to the **OK** button and then press the **SET** key to continue.

2 Documentation Devices

Documentation and Storage Devices 3

Using the CD/DVD Drive 3

Storing and Retrieving System Presets and QuickSets 4

File Type Descriptions 6

Video Recorders 6

Video Communication Set Up 7

Recording Patient Data 7

Using Video Playback 9

Printers 10

Report Printers 10

Manufacturers of Medically-Approved Isolation Transformers 11

Mitigating the Risk of Connecting a Report Printer 12

Patient Environment 13

USB Report Printers 14

Connecting and Installing a USB Printer 14

Alternate USB Printer Installation 15

Connecting and Installing a Network Printer 16

Documentation and Storage Devices

The ultrasound system can accommodate three optional, on-board documentation devices in addition to the disk drive (CD/DVD drive) that is a standard feature of the system. Controls and keys located on the ultrasound system are used to transfer images and patient reports to a documentation device or a disk drive.

- Documentation devices include a black and white printer, a color (video) printer, and a video recorder (VCR/DVR).
- Storage devices include a CD/DVD drive.

Using the CD/DVD Drive

To insert a disk into the CD/DVD drive on the ultrasound system:

1. Press the **Patient Browser** key on the keyboard to display the Study screen.
2. If the system displays the Image screen, then select the **Study Screen** button to display the Study screen.
3. Select the **Eject** button in the **Export/Import** section of the Study screen.

   The system ejects the CD/DVD tray.
4. Place the disk onto the CD/DVD tray.
5. Select the **Load** button in the **Export/Import** section of the Study screen.

   The system closes the CD/DVD tray and reads the disk.

   Note: If the CD/DVD **Status** displays **Unknown**, select **Load** again and wait until the status displays **Ready**.

To eject an inserted CD/DVD:

1. Press the **Patient Browser** key on the keyboard to display the Study screen.
2. If the system displays the Image screen, then select the **Study Screen** button to display the Study screen.
3. Select the **Eject** button in the **Export/Import** section of the Study screen.

   The system ejects the CD/DVD tray.
4. Remove the disk from the CD/DVD tray.
5. Select the **Load** button in the **Export/Import** section of the Study screen.

   The system closes the CD/DVD tray.

Storing and Retrieving System Presets and QuickSets

You can save user-defined QuickSets and system presets to a CD/DVD and then retrieve the files as needed.

See also: File Type Descriptions, p. 2-6

Note: Text in the **Siemens Service Software** screen is displayed in English only.

To display the Backup/Restore Dialog screen:

1. Press the **Presets** key on the keyboard to display the **Presets** screen.
2. Select **Service** on the left of the screen.
3. Select the **Service** button to display the **Siemens Service Software** screen.
4. Delete **none** from the **Password** box and then select **OK** to display the user-configurable options.
5. Select **Backup & Restore**.

To save system presets and/or QuickSets to the inserted CD/DVD:

1. Press the eject button on the CD/DVD drive on the left side of the ultrasound system to eject the CD/DVD tray.
2. Insert a blank disk and then press the eject button again to load the disk.
3. Display the **Backup/Restore Dialog** screen.
4. Select **Backup** from the **Select** drop-down list.
5. Select the check box for each required QuickSet and then select **Next**.
6. Select the check box for each required file type and then select **Backup** in the **Backup** dialog box.

   Note: If a disk is absent, the system displays a message requesting insertion of a disk.

   The system displays a progress bar during the backup process and then displays a completion message and ejects the CD/DVD tray when the process is complete.
7. Select **OK** to redisplay the **Backup/Restore Dialog** screen.
8. To redisplay the image screen:
   a. Select **Home** on the **Backup/Restore Dialog** screen.
   b. Select **Exit** on the Siemens Service Software screen to display the **Presets** screen.
   c. Select **Cancel**.

To retrieve system presets and/or QuickSets from the inserted CD/DVD:

Note: When you retrieve system presets, the system overwrites the related settings in the system presets. When you retrieve a QuickSet, the system overwrites any existing QuickSet that has the same name.

1. Press the eject button on the CD/DVD drive on the left side of the ultrasound system to eject the CD/DVD tray.
2. Insert a blank disk and then press the eject button again to load the disk.
3. Display the **Backup/Restore Dialog** screen.
4. Select **Restore**.

   The system displays a message requesting confirmation that the backup disk is inserted.
5. Select **OK** to display the **Restore** dialog box.
6. Select the check box for each required file type and then select **Restore** to begin the restore process.
7. Select **OK** when the completion message displays.

   The system displays the **QuickSet Utility** dialog box
8. To delete all QuickSets stored on the system and add new QuickSets:
   a. Select the **Clean QuickSet(s) on System** check box in the **Options** section.
   b. Select the required QuickSets in the **QuickSets – Removable Media** section.
   c. Select the **Restore** button.

      The system deletes all QuickSets stored on the system and restores the selected QuickSet(s) from the disk media.
9. To add selected QuickSets to the system without deleting existing QuickSets:
   a. Select the required QuickSets in the **QuickSets – Removable Media** section.
   b. Select the **Restore** button.

      The restored QuickSets display in the **QuickSets – System** section.
10. To exit the **QuickSet Utility** dialog box, select **Close**.

    The system displays a message that power must be cycled to the system for completion of the operation.
11. Select **OK**.
12. Cycle power to the ultrasound system.

File Type Descriptions

Each file type saves a specific set of system settings.

Note: The listed file types correspond to the information stored on the system or inserted CD/DVD. For example, the **Service Image** file type is listed in the **Backup** dialog box only when service images are stored on the system.

File Type	Settings Saved
M&R User Defined	Settings from the **Measurement & Report** menu item in the system presets.
Quickset	All QuickSets stored on the ultrasound system's hard disk and the default setting (exam type or QuickSet) specified for each transducer.
Service Image	Service images from the **Service** menu item in the system presets.
Service Log	Service logs from the **Service** menu item in the system presets.
Service Test Report	Service test reports from the **Service** menu item in the system presets.
System Preset	Settings from the system presets (excludes Service information and settings accessed through **Measurement & Report**).
License Info	Licenses for software-based options.
User Defined Map	Settings from the **Modify Map** screen.

Video Recorders

⚠ **Caution:** When the ultrasound system is expecting a video signal from a connected input/output device, a bright band displays on the screen. The screen saver on the ultrasound system does not replace this bright band. To avoid permanent damage to the screen (phosphorus burn-in), return the system to an imaging display before leaving the monitor unattended.

Note: Please refer to the manufacturer's user manual for instructions on operating your video recorder.

Note: While the ultrasound system is designed to provide the highest quality of images to a documentation or storage device, image quality during playback is dependent on the video recorder and video media being used. Always use an S-VHS videotape for a VCR.

Video Communication Set Up

Connect the video recorder cables to the "Y/C Video" ports on the Input/Output panel of the ultrasound system.

Use the system presets to designate the video input port on the ultrasound system that is connected to the video recorder cables.

Peripheral > Video > Video Input Source

To designate which video input port is connected to the video recorder cables:

1. Press the **Presets** key on the keyboard to access the system presets.
2. Select **Peripheral** on the left of the screen.
3. Select an option for **Video Input Source**.
4. Select a recording device for **Device Type**.
5. Select the function for **Key Function**, if required.
6. Select the **Save** button to store the new settings and exit the system presets.

Recording Patient Data

Use the **VCR/DVR** key to send examination data to the video recorder for recording on video media. Standard video signals are provided in PAL and NTSC formats.

Use the system presets to configure the **VCR/DVR** key function.

Peripheral > VCR/DVR > Key Function

Video status icon indicates recording status: a red icon displays during recording, and a white icon displays during pause or stop. The recording time also displays beside the icon.

To record patient data using a video recording device:

Note: Use the slide show capability to record all images in a study.

1. Insert the media into the video recorder and then press the **VCR/DVR** key on the control panel to begin recording.

   The system increases the illumination of the **VCR/DVR** key while recording is in progress.

2. If the **VCR/DVR** key is configured in system presets to toggle the recording function with the pause function, then press the **VCR/DVR** key to pause recording. To resume recording, press the **VCR/DVR** key a second time.

   While recording is paused, the system flashes the illumination of the **VCR/DVR** key and displays the video status icon on the status bar at the lower left of the screen.

3. If the **VCR/DVR** key is configured in system presets to toggle the recording function with the stop function, then press the **VCR/DVR** key to stop recording. To resume recording, press the **VCR/DVR** key a second time.

   When recording stops, the **VCR/DVR** key is no longer illuminated.

4. To end the recording session, press the **VIDEO I/O** key to display playback soft key selections.

   The system automatically stops recording.

5. To eject the video media, press the toggle key for **Eject**.

   The video recorder powers off when the system is turned off.

Using Video Playback

During video playback, an image can be paused and then printed through a connected printing device.

To play back a recorded image:

1. Insert the media into the video recorder and then press the **VIDEO I/O** key on the control panel.

   Communication between the video recorder and the imaging system is opened. The system displays soft key selections for controlling the operation of the video recorder during video playback.

2. Use the toggle keys for the following soft key selections to control viewing of the recording:

Selection	Description
REW (Rewind)	When playback is stopped, this selection plays the media in a backward direction at a high speed while displaying the content on the image screen.
	During playback, this selection plays the media in a backward direction at low speed while displaying the content on the image screen.
Eject	Opens and closes the disk tray on the recording device.
Play	Starts playback.
Pause	Pauses playback or recording.
FF (Fast Forward)	When playback is stopped, this selection plays the media in a forward direction at high speed while displaying the contents on the image screen.
	During playback, this selection plays the media in a forward direction at low speed while displaying the content on the image screen.
Stop	Stops playback or recording.
Shuttle	Uses the trackball to play the media in a forward or backward direction, at low or high speed.
	When you select **Shuttle**, a shuttle indicator displays at the top of the screen. Before you move the trackball in either direction, the shuttle indicator displays only a vertical line, indicating the playback of the media is paused.
	To play the media in a forward direction, roll the trackball to the right. To play the media in a backward direction, roll the trackball to the left.
	To play the media at a low speed, move the trackball slowly in the required direction.
	To play the media at a high speed, move the trackball quickly in the required direction
Step Frame	Displays the frames one at a time in the selected direction.
	To move to the next frame, roll the trackball to the right; to move to the previous frame, roll the trackball to the left.
Search Index	Searches in the specified direction for the specified index marker (1 to 99) you entered using the **Write Index** function.
	*For example, if 10 is entered into the dialog box and **Backward** is selected, the media searches 10 index markers backward from the current display.*
Counter Search	Searches the recording media in the selected direction for the specified counter value and displays the corresponding frame.
	Note: VCRs can accept negative numbers.

Only DVRs have the following selections:

Selection	Description
Write Index	Enters an index marker (bookmark) at the location of the displayed frame. You can enter any number from 01 to 99.
Prev Study	Plays the previous study.
Begin of Study	Restarts the current study.
Next Study	Plays the next study.
Study List	Displays the list of studies recorded on the media.

3. To discontinue communication between the video recorder and the ultrasound system and resume real-time imaging, press **VIDEO I/O** again or press the **ESCAPE** key.

Printers

You can print images from a current examination, a patient report, CINE data, or an image retrieved from a disk or videotape.

Note: Refer to the manufacturer's user manual for proper handling and operating instructions of the printer installed on your ultrasound system.

Report Printers

⚠ **WARNING:** Accessory equipment connected to the analog and digital interfaces must be certified according to the respective EN and IEC standards (e.g., EN 60950 and IEC 60950 for data processing equipment and EN 60601-1 and IEC 60601-1 for medical equipment). Furthermore, all configurations shall comply with the system standard EN 60601-1-1 and IEC 60601-1-1. Anyone who connects additional equipment to the signal input or signal output ports configures a medical system and is therefore responsible that the system complies with the requirements of the system standard EN 60601-1-1 and IEC 60601-1-1. Siemens can only guarantee the performance and safety of the devices listed in the *Instructions for Use*. If in doubt, consult the Siemens service department or your local Siemens representative.

⚠ **WARNING:** Equipment connected to the ultrasound system and in the patient environment must be powered from a medically-isolated power source or must be a medically-isolated device. Equipment powered from a non-isolated source can result in chassis leakage currents exceeding safe levels. Chassis leakage current created by an accessory or device connected to a non-isolated outlet may add to the chassis leakage current of the ultrasound system.

⚠ **WARNING:** Non-medical grade report printers cannot be used within a patient environment.

⚠ **WARNING:** During use of a non-medical grade report printer or when a non-medical grade report printer is connected to the ultrasound system, the ultrasound system cannot in any way be in contact with a patient.

Relevant standards for some non-medical electrical equipment may have limits for enclosure leakage currents higher than required by medical standards. These higher standards are acceptable only outside the patient environment. It is essential to reduce enclosure leakage currents when non-medical electrical equipment is to be used within the patient environment. Measures for reducing leakage current include use of a medically-approved isolation transformer.

See also: Technical Description, Appendix A, Instructions for Use

The ultrasound system has printer drivers compatible with non-medical grade report printers. Siemens does not guarantee the performance and safety of any non-medical grade report printer. Non-medical grade report printers do not fulfill the following safety requirements:

- EN 60601-1-1 and IEC 60601-1-1 (Medical Electrical Equipment, Part 1: General Requirements for Safety).
- EN 60601-1-2 and IEC 60601-1-2 (Electromagnetic Compatibility of Medical Devices).

If a non-medical grade report printer is to be used with the ultrasound system, then you must ensure mitigation is provided to meet all safety requirements. It is the responsibility of the user to ensure that the ultrasound system in combination with the non-medical grade report printer complies with safety requirements.

- Always use a medically-approved isolation transformer with a non-medical grade report printer.
- Mitigate risk with regard to the Electromagnetic Compatibility of Medical Devices requirement. A non-medical grade device must be designed, manufactured, and certified to meet the same EMC (electromagnetic compatibility) requirements as the ultrasound system, or other means must ensure that the overall EMC requirements are met.

Manufacturers of Medically-Approved Isolation Transformers

Manufacturer	Web Site
Tripp Lite	www.tripplite.com
Toroid Corporation of Maryland	www.toroid.com
Dale Technology Inc.	www.daletech.com

Mitigating the Risk of Connecting a Report Printer

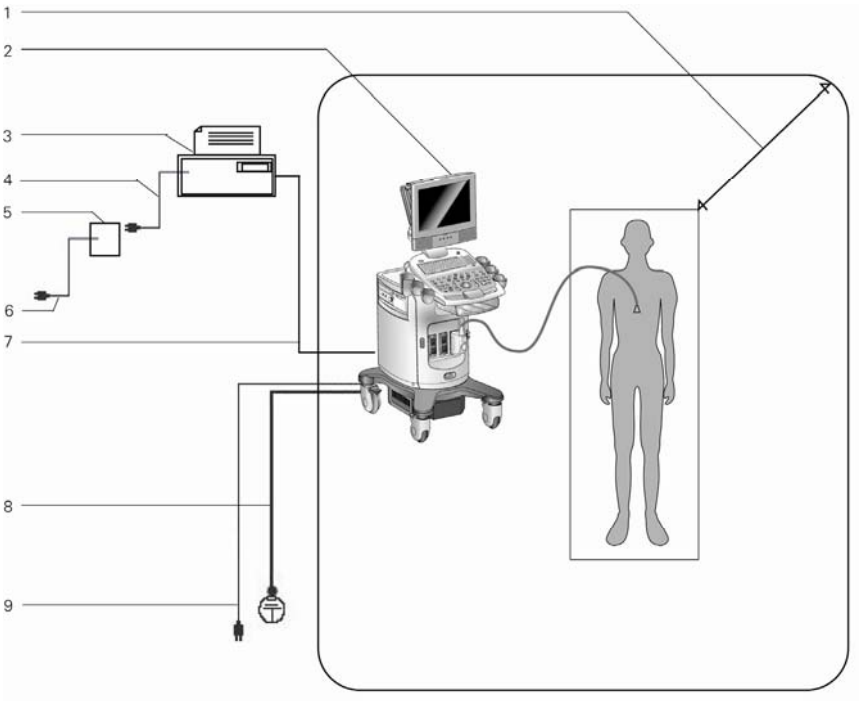
To fulfill EN 60601-1-1 and IEC 60601-1-1 (Medical Electrical Equipment, Part 1: General Requirements for Safety) requirements for non-medical peripheral equipment:

- The non-medical peripheral equipment must be approved according to any other EN or IEC standard (EN XXXXX or IEC XXXXX, e.g., equipment complying with EN 60348 and IEC 60348, EN 60950 and IEC 60950, etc.).
- The connection of non-medical peripheral equipment to your ultrasound system must adhere to the following conditions:
  1. Connect the ultrasound system to an AC power outlet within a medically used room within the patient environment. A patient environment is defined as an area in which medical examination, monitoring, or treatment of the patient takes place. The patient environment is located 1.5 meters (1.8 meters [6 feet] in Canada and the U.S.A.) around the patient location.
  2. Connect the peripheral equipment AC power cable to a medically approved isolation transformer.
  3. Connect the medically approved isolation transformer to a main AC outlet either inside or outside the patient environment. The peripheral device and medically approved isolation transformer combination can be either (a) within the same room as the ultrasound system, or (b) in a non-medically used room.

For additional information and other possible combinations, please refer to the Medical Electrical Equipment Standard EN 60601-1-1 or IEC 60601-1-1, Annex BBB.7, Scenario 3c.

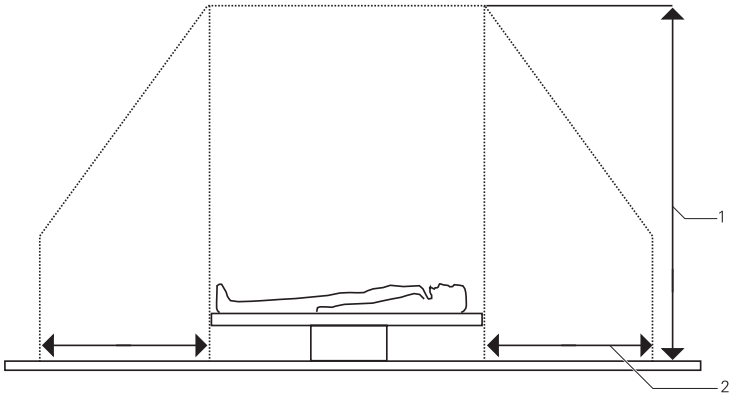
Note: The above information is based on current EN 60601-1-1 and IEC 60601-1-1 standards, dated 2000-12. If your country's regulatory standards for medical equipment do not correspond to EN 60601-1 and IEC 60601-1, as well as EN 60601-1-1 and IEC 60601-1-1, your local requirements may differ.

Patient Environment



Example of patient environment and medically-approved isolation transformer.

1 Patient environment (represented by shading, extending exactly 1.5 meters (1.8 meters [6 feet] in Canada and the U.S.A.) around patient and ultrasound system)
2 Ultrasound system
3 Peripheral equipment (EN XXXXX and IEC XXXXX)
4 Peripheral equipment power
5 Medically-approved isolation transformer
6 Medically-approved isolation transformer power cord
7 Printer data cable
8 Additional protective earth
9 Ultrasound system power



Example of patient environment.

1 2.5 meters (typical)
2 1.5 meters (1.8 meters [6 feet] in Canada and the U.S.A.)

USB Report Printers

You can print patient reports by connecting a USB printer to one of the USB ports located on the input/output panel on the back of the ultrasound system.

You must observe all safety precautions for connecting a non-medical device to the ultrasound system.

Note: The **SET** key on the control panel functions as a point-and-select device (similar to a computer mouse) when used with the trackball. To select an on-screen object such as a button or a check box, roll the trackball to position the pointer (cursor) on the object and then press the **SET** key on the control panel.

Connecting and Installing a USB Printer

Before beginning this procedure, ensure that the USB printer is disconnected from the ultrasound system.

To connect a USB printer:

1. Press the on/off (⏻) switch to power on the ultrasound system.

   When the power on sequence is complete, the system displays the active image screen.

2. Power on the USB printer and ensure that there is paper in the feeder tray.
3. Connect the USB cable from the printer to a USB port on the input/output panel on the back of the ultrasound system.

   After a few seconds, the system displays the **Found New Hardware Wizard** dialog box.

   Note: If the system does not display the new hardware dialog box, it displays an error message. If this happens, use the "Alternate USB Printer Installation" procedure in the next section.

4. Press the **SET** key on the control panel to activate the trackball pointer.
5. Select **Install from a list or specific location (Advanced)** and then select **Next**.

   The system displays a new dialog box.

6. Select **Don't search. I will choose the driver to install.** and then select **Next**.
7. Ensure that the **Show compatible hardware** check box is not selected.
8. Select the printer manufacturer name in the **Manufacturer** column and the printer model in the **Printers** column and then select **Next**.

   The system displays the **Update Driver Warning** message.

9. Select **Yes**.

   The system displays the **Completing the Found New Hardware Wizard** message.

10. Select **Finish**.

    The system displays the active image screen.

11. Print a report to confirm that the printer is installed correctly.

Alternate USB Printer Installation

Use this procedure when you have attempted to install a USB printer and the ultrasound system does not automatically display the **Found New Hardware Wizard** dialog box.

1. Press the **SET** key on the control panel to activate the trackball pointer.
2. Select the **Cancel** button until the system displays the message **Do you want to continue Setup without copying this file.**
3. Select **No**.

   The system displays the active image screen.
4. Press the **Presets** key.
5. Select **Printer** on the left of the screen.

   The system displays the **Printer** screen.
6. Select **Install**.

   The system displays the **Add Printer Wizard** dialog box.
7. Select **Next**.
8. Follow these instructions for each wizard screen presented by the **Add Printer Wizard**.

Wizard Screen	User Action
Local or Network Printer	1. Select **Local printer attached to this computer**. 2. Clear (disable) the **Automatically detect and install my Plug and Play printer** check box. 3. Select **Next**.
Select a Printer Port	1. Select **Use the following port:**. 2. Select the down arrow on the right. 3. Select an available USB port (for example, **USB001 (Virtual printer port for USB)**). 4. Select **Next**.
Install Printer Software	1. Locate and select the printer manufacturer's name in the **Manufacturer** column. 2. Locate and select the printer model in the **Printers** column.
	Follow this procedure if the printer is not listed: 1. Select **Have Disk**. 2. Insert the Installation disk and then select **Browse**. 3. Select the virtual software from the **Printers** column. 4. Select **Next**.
Use Existing Driver	1. Select **Keep existing driver (recommended)**. 2. Select **Next**.

Wizard Screen	User Action
Name Your Printer	1. Type a name for the printer. 2. Select the checkbox if you want this printer to be the default printer for the ultrasound system. 3. Select **Next**.
Printer Sharing	1. Select **Do not share this printer**. 2. Select **Next**.
Print Test Page	1. Select **Yes**. 2. Select **Next**.
Completing the Add Printer Wizard	1. Select **Finish**. 2. Select the **OK** button after the test page prints.

The system displays the **Printer** screen.

9. Select **OK**.

   The system displays the active image screen.

10. Print a report to confirm that the printer is installed correctly.

Connecting and Installing a Network Printer

Before beginning this procedure, ensure that you have the server path name or URL for your network printer.

To connect a network printer:

1. Press the **Presets** key.
2. Select **Printer** on the left of the screen.

   The system displays the **Printer** screen.

3. Select **Install**.

   The system displays the **Add Printer Wizard** dialog box.

4. Select **Next**.
5. Select **A network printer, or a printer attached to another computer**.
6. Clear (disable) the **Automatically detect and install my Plug and Play printer** check box. Then select **Next**.
7. Select:
   - **Browse for a printer**, if you don't know the path for the printer.
   - **Connect to a printer**, and then type the server path for the printer in the box below.
   - **Connect to a printer on the Internet or on a home or office network**, and then type the URL for the printer in the box below.
8. Select **Next**.
9. Follow the instructions presented by the **Add Printer Wizard**.
10. Print a report to confirm that the printer is installed correctly.

Confirming Installation

To confirm installation, select a USB printer and then print a report.

Selecting the USB Printer

Use the system presets to select a USB printer as the system's report printing device.

Printer

To select a USB printer:

1. Press the **Presets** key on the keyboard.
2. Select **Printer**.
3. Select the required printer from the **PC Printer** drop-down list.
4. Select the **Save** button.

   The system displays the active image screen.

Testing the USB Printer Installation

Test the installation of the printer by printing a report.

Note: You can perform this test without actual data in a report.

To test the USB printer installation:

1. Press the **Exam** key on the keyboard.

   The system displays the **Exam and QuickSet** screen.
2. Select an exam type with support for a patient report, such as **C-Vas**.
3. Press the **Report** key.
4. Select the **Send Report** button on the lower right of the screen.

   The system sends the report to the selected USB printer and changes the **Send Report** button to **Cancel**.

   a. To interrupt immediately, select the **Cancel** button.

   b. To stop after the current page, press the **ESCAPE** key.

3 DICOM Connectivity Option

About DICOM 3
- Current and Previous Studies 3
- Screens 4
- DICOM Storing and Printing 5
- Storing Studies 5
- DICOM Structured Reporting 6

DICOM Setup 7
- Configuring the System and Devices for DICOM 7
  - Creating and Editing Aliases 7
  - Activating Aliases 10
  - Deleting Aliases 10
- Field Descriptions for DICOM Configuration Screens 11
  - Fields in the Host Setup Screen 11
  - Fields in the DICOM Storage Server Setup Screen 12
  - Fields in the Worklist Server Setup Screen 13
  - Fields in the DICOM MPPS Server Setup Screen 13
  - Fields in the DICOM Printer Setup Screen 14
  - Fields in the Storage Commitment Setup Screen 15

DICOM Storing and Printing 16
- Configuring Clip Options for DICOM 16
- Configuring the System for In-Progress Store 16
- Storing Images to DICOM Storage Servers 17
- Printing Images to DICOM Printers 18
  - Arranging Printer Layout Pages 21
- Queue Status Indicators 22

About DICOM

Note: Before using the DICOM Connectivity option, familiarize yourself with the functionality of the DIMAQ-IP Study and Image screens.

The DICOM (Digital Imaging and Communications in Medicine) Connectivity option works in conjunction with the DIMAQ-IP integrated workstation to provide digital image transfer via a DICOM network for both storage and printing. With the option installed, the ultrasound system is a DICOM Storage Class User and DICOM Print Class User.

Current and Previous Studies

This chapter describes studies as ***current*** or ***previous***. Since the ultrasound system allows only one patient to be registered at a time, a current study is linked to that patient. You initiate a current study (examination) by registering a patient. This study remains current until you create a new study by:

- Registering a new patient after pressing the **New Patient** key, or
- Re-registering the current patient by selecting the **New** button on the Study screen.

You can also end a current study without creating a new study by:

- Selecting the **Close Study** button in the Image screen or the **Close** button in the Study screen, or
- Shutting down the ultrasound system.

A current study that has been ended in any of these ways becomes a previous study. A previous study remains linked to its original patient data and can be accessed from the Study screen. Original patient data cannot be changed in a previous study.

Screens

The following screens are used with DICOM and are accessed by pressing the **Patient Browser** key on the keyboard:

- ***Image screen*** – Displays images for the currently selected study. When the DICOM option is installed, includes selections for sending images to DICOM printers.

  Note: In this chapter, the term "Image screen" refers to a screen within the DIMAQ-IP feature. In other chapters of the operating instructions, the use of "image screen" refers to a typical live image screen that displays real-time images as they are acquired.

- ***Study screen*** – Lists studies that are saved on the selected disk (HD or CD/DVD or USB-compatible storage device). When the DICOM option is installed, includes selections for sending studies to DICOM printers and storage servers.
- ***DICOM screen*** – Displays tabs for pages that list current DICOM activity:
  - **DICOM BW Printer Layout** displays black and white images assembled according to a selected format for the **DICOM Print Queue**.
  - **DICOM Color Printer Layout** displays color images assembled according to a selected format for the **DICOM Print Queue**.
  - **DICOM Print Queue** lists images sent to the DICOM printer.
  - **DICOM Store Queue** lists images sent to the DICOM storage server.
- ***Worklist screen*** (Requires the DICOM 3.0 Connectivity Option) – For automatic entry of data on the **Patient Data** form.
- ***Procedure screen*** (Requires the DICOM 3.0 Connectivity Option) – Displays the **Choose Procedure** screen for selection of another procedure for the currently registered patient.
- ***Live screen*** – Displays the image screen.

DICOM Storing and Printing

You can send images from current or previous studies to the **DICOM Store Queue** as follows:

- You can send all images directly from the Study screen to the **DICOM Store Queue** for a previous study.
- If the **Autostore to DICOM** setting is selected in the system presets, you can automatically send all images in the Image screen to the **DICOM Store Queue** when a current study is closed.

You can print from current or previous studies to a DICOM printer as follows:

- You can assemble individual images on a printer layout page in a current or previous study.
- You can print single or multiple pages of images from a printer layout page in a current or previous study.
- You can send all images from a previous study directly to a printer queue from the Study screen.
- The following settings in the system presets also allow the ultrasound system to print automatically when certain conditions are met:
  - If the **Print When Page Is Full** setting is selected, a page is sent to the **DICOM Print Queue** as soon as the last image required by the page layout is added. An incomplete page is automatically sent to the **DICOM Print Queue** when you close a current study or select another study.
  - If the **Print At End Of Exam** setting is selected, you can assemble multiple pages prior to printing, and all pages are automatically sent to the **DICOM Print Queue** when you close a current study or select another study.

Storing Studies

All current and previous studies on the system's hard disk are listed in the Study screen when **HD** is selected in the **Disk** box of the Study screen. All studies stored on the system's disk media are listed in the Study screen when **CD/DVD** is selected in the **Disk** box. All studies stored on a USB-compatible storage device are listed in the Study screen when **USB** is selected in the **Disk** box.

You can access images from a previous study without closing the current study.

DICOM Structured Reporting

Note: DICOM structured reports are available for Obstetrics, Gynecology, Cardiac and Vascular exams only.

The system automatically generates a DICOM structured report (SR) for the current examination and stores the SR to the study on the ultrasound system's hard disk.

Note: DICOM structured reports are not listed in the DIMAQ Image screen; you must send the SR to a DICOM device to view the SR.

Use the system presets to send DICOM structured reports to DICOM devices.

DICOM

DICOM Setup

Prerequisite: A working knowledge of Windows networking principles is necessary and beneficial for completing DICOM configuration.

Use the system presets to set up DICOM.

DICOM

DICOM Setup requires the following information:

- Ultrasound system (host) host name, alias, AE title, IP address, port number, subnet mask, and default gateway
- Media type and duplex mode required for connection to the host (ultrasound system)
- Alias, AE title, IP address, and port number for each DICOM device

You must check the storage server for compatibility with the ultrasound system settings.

To begin DICOM Setup, connect a network cable to the Ethernet port on the Input/Output panel of the ultrasound system.

Configuring the System and Devices for DICOM

You can configure the ultrasound system and connected devices (such as servers and printers) for DICOM by creating, editing, and activating aliases (DICOM configurations). You can also delete aliases.

Creating and Editing Aliases

You can create and edit aliases (DICOM configurations) for the host (ultrasound system) and other devices, such as servers and printers.

To display the DICOM configuration screen for the required alias (DICOM configuration):

Note: DICOM configuration screens cannot be displayed during a patient examination. If a patient is registered, then close the study before beginning this procedure.

1. Press the **Presets** key on the keyboard and then select **DICOM** on the left of the screen.

   The system displays the **DICOM** screen.

2. To edit an existing alias, select the alias from the related drop-down list and then select the **Edit** button to the right of the selected configuration. For example, to edit the "archive1" storage server alias, select "archive1" from the **Storage Server** drop-down list and then select the **Edit** button to its right.

   The system displays the DICOM configuration screen for the selected alias, containing the existing configuration.

3. To create an alias, select the **New** button to the right of the related drop-down list. For example, to create a storage server alias, select the **New** button to the right of the **Storage Server** drop-down list.

   The system displays the DICOM configuration screen for the selected type of alias.

To create or edit an alias (DICOM configuration):

1. Display the required DICOM configuration screen and then use the following instructions to change configuration:
   a. Use the keyboard to enter values for the fields in the screen.
   b. If the alias is a device connected to the ultrasound system (such as a server or printer), then confirm successful connection and valid configuration information:
      - To verify connection, select the **Ping** button.
      - To verify connection and configuration information, select the **Echo** button.
   c. To create a record of the configuration settings, print the screen: Press the documentation control (**PRINT/STORE1**, **PRINT/STORE2**, or **CLIP STORE**) that is configured in the system presets for disk storage.

      Note: Siemens recommends retaining a record of the configuration settings. This information is useful in identifying incomplete or incompatible entries if a communication failure occurs or during troubleshooting.

   d. To save configuration changes and redisplay the **DICOM** screen, select the **OK** button at the bottom of the DICOM configuration screen.
   e. To cancel configuration changes and redisplay the **DICOM** screen, select the **Cancel** button and then select **Yes** to confirm cancellation.
2. Activate the new alias by selecting the alias from the related drop-down list on the **DICOM** screen. For example, to activate the "archive2" storage server alias, select "archive2" from the **Storage Server** drop-down list.
3. Perform the following additional configuration(s), as necessary:

Alias:	Do this:
Host	To indicate the status of network connection in the **Network** section of the Study screen, select the **Show network status** check box below the selected host alias.
Storage server	Select a queuing method listed below the selected storage server alias: ▪ **Store During Exam** adds each image to the **DICOM Store Queue** list when you store the image to the study. ▪ **Store At End Of Exam** adds all images to the **DICOM Store Queue** list when you close the study. **Note:** To view the **DICOM Store Queue** list, press **Patient Browser** to display the Study screen, select the required study, select **DICOM Screen**, and then select the **DICOM Store Queue** tab. To automatically send all stored images to the DICOM storage server, select the **Autostore to DICOM** check box below the selected storage server alias.
Storage commit server	Select a storage method listed below the selected storage server alias: **Note:** Siemens recommends the **After All Images are Stored** selection. ▪ **After Every Image is Stored** automatically sends each image when you store the image to the study. ▪ **After All Images are Stored** automatically sends all stored images when you close the study.

Alias:	Do this:
Worklist server	To configure the system to perform a search of all procedures on the Worklist server for the next 24 hours, select the **Streamlined Search** check box below the selected Worklist server alias. **Note:** If performing the streamlined search from the Patient Data form, the system uses any data entered onto the form to narrow the search.
MPPS Server	Works with the Modality Worklist server to provide exam status updates
DICOM Printer	Select a printing protocol listed below the selected DICOM printer alias: **Note:** You can select a setting for the black and white printer and a setting for the color printer. ▪ **Print When Page is Full** automatically prints a page when the last image is added to the page. The maximum images-per-page value is defined by the **Display Format** setting in the respective **DICOM Printer Setup** screen. ▪ **Print At End of Exam** automatically prints all images when the study is closed. **Note:** Select the **more…** button to display additional fields.

4. To save all configuration changes and exit the system presets, select the **Save** button.

   If you changed any host configuration information, then the system prompts you to reboot the ultrasound system (cycle power).

5. To cancel all configuration changes and exit the system presets, select the **Cancel** button and then select **Yes** to confirm cancellation.
6. If the system prompts you to reboot the ultrasound system, or if you added or changed a host name or IP address for any aliases, then reboot the ultrasound system (cycle power) to complete the configuration.

Activating Aliases

You can activate existing aliases (DICOM configurations) for the host (ultrasound system) and other devices, such as servers and printers.

To activate an existing alias:

Note: DICOM configuration screens cannot be displayed during a patient examination. If a patient is registered, then close the study before beginning this procedure.

1. Press the **Presets** key on the keyboard and then select **DICOM** on the left of the screen.

   The system displays the **DICOM** screen.

2. Select the alias from the related drop-down list. For example, to activate the "archive1" storage server alias, select "archive1" from the **Storage Server** drop-down list.
3. To save changes and exit the system presets, select the **Save** button.

   If you changed any host configuration information, then the system prompts you to reboot the ultrasound system (cycle power).

4. If the alias is an MPPS device, then select **Storage** and then select the **AutoStore to DICOM** check box to activate automatic storage of studies to DICOM.
5. If the system prompts you to reboot the ultrasound system, or if you added or changed a host name or IP address for any aliases, then reboot the ultrasound system (cycle power) to complete configuration.

Deleting Aliases

You can delete aliases (DICOM configurations) for the host (ultrasound system) and other devices, such as servers and printers.

To delete an alias:

Note: DICOM configuration screens cannot be displayed during a patient examination. If a patient is registered, then close the study before beginning this procedure.

1. Press the **Presets** key on the keyboard and then select **DICOM** on the left of the screen.

   The system displays the **DICOM** screen.

2. Select the alias from the related drop-down list (such as the **Storage Server** drop-down list), select the **Delete** button to the right of the selected alias, and then select **OK** to confirm.

   The system deletes the DICOM configuration.

3. To save changes and exit the system presets, select the **Save** button.

   If you changed any host configuration information, then the system prompts you to reboot the ultrasound system (cycle power).

4. If prompted, reboot the ultrasound system (cycle power).

Field Descriptions for DICOM Configuration Screens

Fields in the Host Setup Screen

Field	Settings
Alias	text entry
AE Title	text entry
Host Name	text entry
MAC Address	display only (indicates the Media Access Control address detected for the host)
Use DHCP (Use Dynamic Host Control Protocol)	On (checked) Off (cleared)
IP Address	text entry
Subnet Mask	text entry
Default Gateway	text entry
Media Type	**Hardware Default** **AUTOSELECT** **100BASETX** **10BASET**
Duplex Mode	**Hardware Default** **Half Duplex** **Full Duplex**

Fields in the DICOM Storage Server Setup Screen

Field	Settings
Alias	text entry
AE Title	text entry
IP Address	text entry
Port Number	text entry
Write Timeout in Seconds (timeout value for sending to the queue)	text entry
Connect Timeout in Seconds (timeout value for an attempted connection between the host and the storage server)	text entry
Image Format	Specifies the DICOM format used to transfer images to the storage server. **Note:** Calibration information is included with the "New Ultrasound" format only. ▪ **Automatic** specifies the highest quality format that is supported by the server: "New Ultrasound," "Old Ultrasound," or "Secondary Capture" (listed in sequence from highest quality to lowest quality). ▪ **Old Ultrasound** specifies the highest quality format that is supported by the server: "Old Ultrasound" (highest quality) or "Secondary Capture" (lowest quality). ▪ **Secondary Capture** specifies the "Secondary Capture" format. The "Secondary Capture" format does not support clips. ▪ **No Monochrome conversion** disables monochrome conversion for gray scale images and clips stored to the storage server. ▪ **Store grayscale images as Monochrome** converts gray scale images (stored to the storage server) to monochrome format. **Note:** The system adds the DICOM attributes for "window" and "level" information to monochrome-formatted images. ▪ **Store grayscale images and clips as Monochrome** converts gray scale images and clips (stored to the storage server) to monochrome format. **Note:** The system adds the DICOM attributes for "window" and "level" information to monochrome-formatted images. ▪ **Store all images as Monochrome** specifies all images (stored to the storage server) to monochrome format. ▪ **Store all images and clips as Monochrome** specifies all images and clips (stored to the storage server) to monochrome format.
Send SR	On (checked) Off (cleared) When enabled (checked), includes the structured report when sending the study to this device. **Note:** Available for Cardiac and OB/EOB exams only.
Number of Times to Retry Failure	text entry
Seconds Between Each Retry	text entry
Ping and Echo Timeout in seconds (timeout value for basic communication tests with the host)	text entry

Fields in the Worklist Server Setup Screen

Field	Settings
Alias	text entry
AE Title	text entry
IP Address	text entry
Port Number	text entry
Maximum Number of MW item (maximum number of search results displayed on the **Worklist Search** screen)	text entry
Ping and Echo Timeout in Seconds (timeout value for basic communication tests with the host)	text entry
Write Timeout in Seconds (timeout value for sending to the queue)	text entry
Connect Timeout in Seconds (timeout value for an attempted connection between the host and the storage server)	text entry

Fields in the DICOM MPPS Server Setup Screen

Field	Settings
Alias	text entry
AE Title	text entry
IP Address	text entry
Port Number	text entry
Ping and Echo Timeout in seconds	text entry
Number of Times to Retry Failure	text entry
Seconds Between Each Retry	text entry
Write Timeout in Seconds	text entry
Connect Timeout in Seconds	text entry
Store Image Format	**Note:** Calibration information is included with the "New Ultrasound" format only. ▪ **Automatic** specifies the highest quality format that is supported by the server: "New Ultrasound," "Old Ultrasound," or "Secondary Capture" (listed in sequence from highest quality to lowest quality). ▪ **Old Ultrasound** specifies the highest quality format that is supported by the server: "Old Ultrasound" (highest quality) or "Secondary Capture" (lowest quality). ▪ **Secondary Capture** specifies the "Secondary Capture" format.

Fields in the DICOM Printer Setup Screen

Note: These fields are listed in the following screens: **DICOM Color Printer Setup** and **DICOM BW Printer Setup**.

Note: Select the **more…** button at the bottom of the screen to display all the fields.

Field	Settings
Alias	text entry
AE Title	text entry
IP Address	text entry
Port Number **Note:** If a separate computer controls the printer, the port number may differ from the port number used for the host and storage server.	text entry
Write Timeout in Seconds (timeout value for sending to the queue)	text entry
Connect Timeout in Seconds (timeout value for an attempted connection between the host and the DICOM printer)	text entry
Orientation	**Portrait** **Landscape**
Number of Times to Retry Failure	text entry
Seconds Between Each Retry	text entry
Display Format (defines the column and row format used for assembling pages to print) **Note:** Verify that the selected format is supported by the destination printer.	**1x1** **1x2** **2x2** **2x3** **3x2** **3x3** **3x5** **4x5** **4x6** **5x6**
Copies (number of copies to print)	text entry
Medium Type	**Paper** **clear film** **blue film** **transparency** **Current**
Min. Density **Note:** Consult the printer manufacturer for appropriate values.	text entry
Max. Density **Note:** Consult the printer manufacturer for appropriate values.	text entry
Border Density (defines the region outside of the print area on the output medium; typically black for film and white for paper)	**Black** **White**
Trim (outlines each printed image with a box)	**Yes** **no**

Field	Settings
Film Size	**8in x 10in** **8.5in x 11in** **10in x 12in** **10in x 14in** **11in x 14in** **11in x 17in** **14in x 14in** **14in x 17in** **24cm x 24cm** **24cm x 30cm** **A3** **A4**
Print Priority	**High** **medium** **low**
Film Destination	**Magazine** **processor** **current**
Magnification	**Replicate** **bilinear** **cubic** **none**
Smoothing Type (used with cubic magnification) **Note:** This field is not required.	text entry
Empty Image Density	**black** (typically used for transparencies) **white** (typically used for paper)
Polarity	**Normal** **reverse**
Configuration **Note:** This string is sent to the printer exactly as it displays in this field. **Note:** This field is not required.	text entry
Ping and Echo Timeout in Seconds (timeout value for basic communication tests with the host)	text entry

Fields in the Storage Commitment Setup Screen

Field	Settings
Alias	text entry
AE Title	text entry
IP Address	text entry
Port Number	text entry
Number of Times to Retry Failure	text entry
Seconds Between Each Retry	text entry
Write Timeout in Seconds	text entry
Connect Timeout in Seconds	text entry
Ping and Echo Timeout in Seconds	text entry

DICOM Storing and Printing

You can store and print images to DICOM devices.

Configuring Clip Options for DICOM

Use the system presets to configure clip options such as length and acquisition timing (retrospective or prospective).

Customize Keys > Clip Capture

With DICOM, consider the following issues when storing multiple clips:

- Multiple, longer clips can require considerable storage server memory and transfer time.
- High compression requires less storage server memory and transfer time.
- The number of clip frames in a clip is determined by two parameters: the duration, which is selected in the system presets, and the number of clip frames to acquire per second.

Configuring the System for In-Progress Store

You can configure the system for in-progress store.

When the system is configured for in-progress store and you press a documentation key that is configured for disk storage, the system stores the image or report to the DICOM storage server and to the system's hard disk.

To configure the system for in-progress store:

Note: DICOM configuration screens cannot be edited during a patient examination. If a patient is registered, then close the study before beginning this procedure.

1. Press the **Presets** key on the keyboard to display the system presets and then select **DICOM** on the left of the screen.

   The system displays the **DICOM** screen.

2. Select the **Store During Exam** option and the **Autostore to DICOM** check box below the storage server alias.
3. Select the **Save** button to save the settings.
4. Configure one or more keys for disk storage.
   a. Press the **Presets** key on the keyboard to redisplay the **Preset** screen.
   b. Select **Customize Keys** on the left of the screen.
   c. Select **Disk Store** for one or more of the documentation keys.
   d. To save changes and exit the system presets, select the **Save** button.

Storing Images to DICOM Storage Servers

You can send selected studies to a connected DICOM storage server.

You can also automatically send stored images during the current study when the system is configured for in-progress store.

See also: Configuring the System for In-Progress Store, p. 3-16

To send selected studies to a connected DICOM storage server:

Note: The studies must be stored on the hard disk.

1. Press the **Patient Browser** key on the keyboard.
2. If the system displays the Image screen, select the **Study Screen** button.
3. Select **HD** in the **Disk** section of the Study screen.
4. Select a study from the Study screen.
   - To select an additional study, press and hold the **Ctrl** key on the keyboard and then press the **SET** key on the control panel.
   - To select consecutive studies, press and hold the **Shift** key on the keyboard and then press the **SET** key on the control panel.
5. Select the server from the drop-down list in the **Network** section (lower right of the screen) and then select the **Send** button.

   The system sends all images from the selected study or studies to the **DICOM Store Queue**.
6. To verify the status of the **DICOM Store Queue**, select the **DICOM Screen** button and then select the **DICOM Store Queue** tab.
7. To display the live image screen, select the **Back** button and then select the **Live Screen** button.

Printing Images to DICOM Printers

You can send an image to a connected DICOM printer during the current study. You can also print all images or selected images from a study to a connected DICOM printer.

Note: The current number of images and the number of images necessary for each full page layout display in the lower left of the live image screen.

To send an image to a printer layout page in a current study:

1. Freeze the image.
2. Press the documentation key that is configured in the system presets for DICOM printing.

   The system saves the image to the system's hard disk and copies the image to the Image screen and to the corresponding layout page.
3. Press the **Patient Browser** key on the keyboard.

   The system displays the print image and any other images in the Image screen.
4. If necessary, select additional images from the Image screen for the printer layout.

   The system outlines each selected image.
5. Select the **BW Print** or **Color Print** button on the bottom of the Image screen to copy the selection to the respective printer layout page.

   Note: The current number of images and the images necessary for a full page layout display next to the **BW Print** or **Color Print** button in the Image screen.
6. The print image is transferred to the **DICOM Print Queue** when one of the following actions occurs:
   - The **DICOM BW Printer Layout** or **DICOM Color Printer Layout** page is filled and **Print When Page Is Full** is selected in the system presets for DICOM.

     Note: The **Display Format** setting for the printer determines the number of images in a full page. If display format for a printer is set to "1/1", a page fills and is sent to the **DICOM Print Queue** immediately with each press of a documentation key configured for DICOM printing.
   - The **Print Page** or **Print All Pages** button is selected in the layout page.
   - The study is closed or a previous study is selected and **Print At End of Exam** is selected for this printer in the system presets for DICOM.

   A separate print queue entry is created for each page.
7. To verify the status of the **DICOM Print Queue**, select the **DICOM Screen** button from the Study screen and then select the **DICOM Print Queue** tab.
8. To change printing options for a set of printed images, select the **DICOM Screen** button from the Study screen, select the **DICOM BW Printer Layout** or **DICOM Color Printer Layout** tab, and then select the **Change** button at the top of the screen.
9. To display the live image screen, select the **Back** button and then select the **Live Screen** button.

To print all images from one or more studies to a DICOM printer:

Note: The studies must be stored on the hard disk.

1. Press the **Patient Browser** key on the keyboard.

   The system displays the Study screen. If the system displays the Image screen, select the **Study Screen** button.

2. Select **HD**, **CD/DVD**, or **USB** in the **Disk** section of the Study screen.
3. Select a study from the Study screen.
   - To select an additional study, press and hold the **Ctrl** key on the keyboard and then press the **SET** key on the control panel.
   - To select consecutive studies, press and hold the **Shift** key on the keyboard and then press the **SET** key on the control panel.
4. Select the printer from the drop-down box in the **Network** section on the lower right of the Study screen and then select the **Send** button.

   The system sends all images from the selected study to the corresponding layout page(s) and to the DICOM printer queue.

5. To confirm that the study was sent to the printer, select the **DICOM Screen** button on the left of the screen and then select the **DICOM Print Queue** page.

   The system lists the studies that were sent to the printer.

6. To redisplay the Study screen, select the **Back** button.
7. To display the live image screen, select the **Live Screen** button.

To print individual images from a study to a DICOM printer:

Note: The studies must be stored on the hard disk.

1. Press the **Patient Browser** key on the keyboard.

   The system displays the Study screen. If the system displays the Image screen, select the **Study Screen** button.

2. Select **HD**, **CD/DVD**, or **USB** in the **Disk** section of the Study screen.
3. Select a study from the Study screen.
4. Select the **Image Screen** button.

   The system displays all images from the selected study in the Image screen.

5. Select an image from the Image screen.

   The system outlines the selected image.

6. Print a selected image by selecting the **BW Print** or **Color Print** button on the left of the Image screen.

   The image is sent to the layout page.

7. To send the layout page(s) to the **DICOM Print Queue**, select the **Study Screen** button to display the Study screen, select the **DICOM Screen** button to display the DICOM screen, and then select the **Print Page** or **Print All Pages** button in the **DICOM BW Printer Layout** or **DICOM Color Printer Layout** page.

   Note: If a layout page becomes full and **Print When Page is Full** is selected in the system presets for DICOM, the system automatically sends the page to the **DICOM Print Queue**. If **Print At End of Exam** is selected in the system presets for DICOM, multiple layout pages can be assembled prior to printing. With either selection, all pages are sent to the **DICOM Print Queue** when the current study is closed.

8. To display the live image screen, select the **Back** button and then select the **Live Screen** button.

Arranging Printer Layout Pages

Printer layout pages allow you to assemble images for printing on the same page. You can delete images from a layout page and rearrange the order of image display on printer layout pages.

When you rearrange images, the system outlines the cut image in yellow and then outlines the selected paste location in blue.

A deleted print image is removed from the printer layout page only. The image remains on the system's hard disk as a part of the study and is displayed in the Image screen. Deleting the print image from the Image screen removes the image from the system's hard disk.

To delete an image from a printer layout page:

Note: This procedure assumes that a current or previous study is open and that at least one print image has been sent to a printer layout page.

1. Select the **DICOM Screen** button from the Study screen.
2. Select the **DICOM BW Printer Layout** or **DICOM Color Printer Layout** tab.
3. Select an image from the layout page.

   The system outlines the selected image.
4. Select the **Delete** button on the layout page.

   The system removes the selected image from the layout page.
5. To display the live image screen, select the **Back** button and then select the **Live Screen** button.

To rearrange print images:

Note: This procedure assumes that a current or previous study is open and that several print images have been sent to at least one printer layout page.

1. Select the **DICOM Screen** button from the Study screen.
2. Select the **DICOM BW Printer Layout** or **DICOM Color Printer Layout** tab.
3. Select an image to be repositioned on the layout page.

   The system outlines the selected image.
4. Select the **Cut** button.

   This image (the cut image) remains in place until you complete the paste operation.

5. Select another image as the paste location.
6. Select the **Paste** button.

   The system inserts the cut image in the paste location.
7. To rearrange images across pages, select the **Cut** button for an image on one page, select the **Next** or **Previous** button to select a different page, select a new paste location, and then select the **Paste** button to insert the image in the paste location on the new page.

   Note: Next selects a higher page number. **Previous** selects a lower page number.
8. To display the live image screen, select the **Back** button and then select the **Live Screen** button.

Queue Status Indicators

Queue Status	Description
Queued	The queue entry has been received by the currently displayed queue. The system has not yet initiated the print/store operation.
Succeeded	The system successfully completed the print/store operation.
In Progress	The system is currently completing the print/store operation.
Suspended	Reserved for future use.
Failed	The system has attempted to complete the print/store operation but has timed out. If retries are still available, then the system displays the number of remaining retries in parentheses (for example, "Failed (2)" indicates two remaining retries). The system continues attempts indefinitely if TCP/IP connection to the destination device cannot be initiated (for example, if the ultrasound system is temporarily located away from network connections). If TCP/IP connection can be initiated, then the system stops attempts when retries are no longer available. **Note:** If this status indicator remains and no more retries are available, then ensure that the system presets settings for the connected devices are complete and compatible and then select the **Retry Job** button.

4 Network Export Function

About the Network Export Function **3**

Configuring the Network Export Function **3**

Setting Up the Export Host 3

Defining and Deleting Settings for the Host and the Export Host 4

Accessing the Setup Screens 4

Defining the Host and the Export Host Settings 5

Deleting the Host and the Export Host Settings 6

Fields in the Setup Screens 6

Fields in the Host Setup Screen 6

Fields in the Export Host Setup Screen 7

Sending Studies to the Export Host **7**

Format of Export Data **9**

About the Network Export Function

The network export function facilitates the transfer of images and reports (patient studies) from the ultrasound system to a shared folder on a destination computer, such as a workstation, server, or personal computer.

To avoid file conflicts, move the transferred studies from the shared folder on the export host before using the files.

Configuring the Network Export Function

Prerequisite: A working knowledge of Windows networking principles is necessary and beneficial for completing configuration of the network export function.

Configuring the network export function involves setting up the export host and then defining the host and the export host settings on the ultrasound system.

Setting Up the Export Host

The ***export host*** is the destination for the shared files. Examples of export hosts are off-line workstations, servers, and personal computers.

The export host must meet the following prerequisites:

- Windows 2000 or Windows XP operating system
- Compatible remote share access
- Ethernet card that supports TCP/IP

To set up the export host:

Note: For detailed instructions, refer to the user manual for the operating system on the workstation (export host).

1. On the export host, create a shared folder and specify security access settings as required.
2. Locate the following information on the export host and write the information down. This information will be used to define the host and the export host settings on the ultrasound system.

   Note: If the export host uses DHCP (Dynamic Host Configuration Protocol), then the IP address may change frequently. Each time the IP address changes, you must reconfigure the system presets on the ultrasound system with the new IP address.

   – Shared folder name
   – Computer name (if defined by the export host)
   – IP address
   – Subnet mask (not required if using DHCP)
   – Gateway (not required if using DHCP)
   – Account and password used to log onto the export host, including domain name (if applicable)
   – Media type and duplex mode required for connection
3. To connect the export host directly to the ultrasound system, use a cross-over ethernet cable.
4. To connect the export host to the ultrasound system through a hub or switch, use a standard ethernet cable.

Defining and Deleting Settings for the Host and the Export Host

You can define the settings for the host and the export host. You can also delete existing host and export host configurations.

The ***host*** is the ultrasound system. The ***export host*** is the destination for the shared files. Examples of export hosts are off-line workstations, servers, and personal computers.

Use the system presets to access the setup screens and define and delete the settings for the host and the export host.

Network Export

Accessing the Setup Screens

You can access the **Host Setup** screen and the **Export Host Setup** screen.

To access the Host Setup screen:

1. Press the **Presets** key on the keyboard to display the system presets and then select **Network Export** on the left of the screen.

   The system displays the **Network Export** screen.

2. To define a new host configuration, select the **New** button on the right of the **Host** line.
3. To edit an existing host configuration, select the configuration from the **Host** drop-down list and then select the **Edit** button on the right of the **Host** line.

To access the Export Host Setup screen:

1. Press the **Presets** key on the keyboard to display the system presets and then select **Network Export** on the left of the screen.

   The system displays the **Network Export** screen.

2. To define a new export host configuration, select the **New** button on the right of the **Export Host** line.
3. To edit an existing export host configuration, select the configuration from the **Export Host** drop-down list and then select the **Edit** button on the right of the **Export Host** line.

Defining the Host and the Export Host Settings

You can define the settings for the host and the export host.

See also: Setting Up the Export Host, p. 4-3

See also: Fields in the Setup Screens, p. 4-6

To define the host and the export host settings:

Prerequisite: Before configuring the system presets on the ultrasound system, you must set up the export host.

1. Access the **Host Setup** screen and use the keyboard to enter values for the fields on the screen.
2. Select the **OK** button to save the changes.
3. Access the **Export Host Setup** screen and use the keyboard to enter values for the fields on the screen.
4. To verify successful connection to the export host, select the **Ping** button.
5. To test writing to the specified shared folder, select the **TestWrite** button.

   Note: If connection is successful, but writing is not, then complete this procedure and test the writing again. A successful writing test may require cycling the power to the system (rebooting the system).

6. Select the **OK** button to save the changes.

   Note: You must also select the **Save** button on the **Network Export** screen to store all the configuration changes.

   The system redisplays the **Network Export** screen.

7. Ensure that the required host and the required export host are activated: Select the host configuration from the **Host** drop-down list and select the export host configuration from the **Export Host** drop-down list. For example, to activate the "archive1" export host configuration, select "archive1" from the **Export Host** drop-down list.
8. Select the **Save** button at the bottom of the **Network Export** screen to save all configuration changes.
9. Cycle power to the ultrasound system.
   a. From the live image screen, power off (⏻) the ultrasound system.
   b. Wait approximately 20 seconds before powering on (⏻) the ultrasound system.

Deleting the Host and the Export Host Settings

You can delete existing configurations containing host or export host settings.

To delete a configuration:

- Select the configuration from the related drop-down list (such as the **Export Host** drop-down list), select the **Delete** button to the right of the selected alias, and then select **OK** to confirm.

Fields in the Setup Screens

Fields in the Host Setup Screen

Field	Description
Alias	User-designated name for host.
AE Title	Application Entity Title as configured for DICOM. **Note:** Disregard this field. The system automatically populates this field if the ultrasound system is configured for DICOM. Otherwise, the system does not use this field.
Host Name	User-designated name for host (you can use the value entered for **Alias**)
MAC Address	Indicates the Media Access Control (MAC) address detected for the host (this field is display only).
Use DHCP	When checked (enabled), activates Dynamic Host Control Protocol for the host (ultrasound system). **Note:** Do not configure the host to use DHCP if DICOM is installed. DHCP is not compatible with DICOM.
IP Address	IP address for the host (ultrasound system). **Note:** Disregard this field if DHCP is enabled.
Subnet Mask	Subnet mask for the host (ultrasound system). Typically identical to the subnet mask for the export host. **Note:** Disregard this field if DHCP is enabled.
Default Gateway	Default gateway for the host (ultrasound system). Typically identical to the default gateway for the export host. **Note:** Disregard this field if DHCP is enabled.
Media Type	**HardwareDefault** **AUTOSELECT** **100BASETX** **10BASET**
Duplex Mode	**HardwareDefault** **HalfDuplex** **FullDuplex**

Fields in the Export Host Setup Screen

Field	Description
Alias	System-defined "computer name" or user-defined name for the export host.
IP Address	IP address of the export host. **Note:** If DHCP is used for the export host, then reconfigure this field when the IP address changes.
Shared Folder	Exact name of the shared folder on the export host, following standard MS Windows conventions for specifying access. **Note:** Disregard this field if **Export to PACS** is enabled.
Account	Account name used to log on to the export host. Examples: "archive1\jsmith" ("computer name" and user name for local account on export host) "jsmith" (user name for local account on export host) "domain1\jsmith" (domain and user name)
Password	Password used to log on to the export host, if applicable. **Note:** This field is case sensitive. The system indicates the status (on/off) of the **Caps Lock** key on the keyboard on the right of the screen.
Ping and Echo Timeout in seconds	Time limit (in seconds) for confirming a successful connection.
Ping	Confirm successful connection.
TestWrite	Attempt storing "test" files to the export host.

Sending Studies to the Export Host

You can send studies from the system's hard disk to the selected, configured export host. You can also automatically send a study to the export host when the study is closed and automatically indicate the status of the network connection.

Note: Before using the transferred studies on the export host (destination device), move the studies from the shared folder to avoid file conflicts.

Use the system presets to select and configure the export host, to automatically send studies to the export host as they are closed, and to automatically indicate the status of the network connection.

Network Export

To send one or more studies to the export host:

Note: If you send a study that already exists on the export host, then the system overwrites the existing study.

Note: Studies to be sent to the network must be closed.

1. Press the **Patient Browser** key on the keyboard to display the Study screen.
2. If the system displays the Image screen, then select the **Study Screen** button to display the Study screen.

   The system displays the Study screen.
3. Ensure that **HD** is selected in the **Disk** section of the Study screen.
4. Select one or more studies for export.
5. In the **Network** section of the Study screen, select the export host from the drop-down list and then select **Send**.

   The system indicates successful transfer by displaying **Network** in the **Archived** column listed on the Study screen. The system indicates unsuccessful transfers by displaying errors. Errors are displayed in English.

To automatically send a study to the export host as the study is closed:

1. Press the **Presets** key on the keyboard to display the system presets.
2. Select **Network Export** on the left of the screen to display the **Network Export** screen and then select the **Autostore to Network** check box located under the export host line.

   The system automatically sends each study to the export host when the study is closed.

To automatically indicate the status of the network connection:

1. Press the **Presets** key on the keyboard to display the system presets.
2. Select **Network Export** on the left of the screen to display the **Network Export** screen and then select the **Show network status** check box located under the host line.

   The system automatically indicates the status of the network connection in the **Network** section of the Study screen.

Format of Export Data

Images and reports are transferred in files to the hard disk of a remotely hosted shared folder. The export format mirrors the hard disk (HD) format of the ultrasound imaging system. Standard Windows 2000 and compatible remote share access file formats are supported.

The remote host maintains a folder for each patient (named by patient ID). Study folders within the patient folder are labeled with the date and time of the study, using the date format *MM.DD.YYYY*, where *YYYY* is the year, *MM* is the month, and *DD* is the day, and the time format *HH.MM.SS*, where *HH* indicates the hour, *MM* indicates the minute(s), and *SS* indicates the second(s). The date format used to name the study folders is unrelated to the date format set in the system presets. Within each study folder are additional folders for images and reports. Images have subfolders to hold contents of application proprietary data for re-launch.

- Single frame images are stored in the images folder as .TIF, .RLE, or uncompressed files.
- Reports are stored in the reports folder. The format is provided by the host software.
- To retain measurement accuracy, measurements must include a calibration (.CAL) file of the same name in each corresponding image folder. The calibration file specifies video format (NTSC, PAL, or SVGA) and pixel spacing. (Pixel aspect is not always 1:1.)

5 Data Transmission Specifications

RS-232C Serial Port **3**
Configuring the Port 3
RS-232C Settings 4
Serial Port Pin Assignments 4

Transmitting Report Data **4**

RS-232C Serial Port

Use the RS-232C serial port located on the input/output panel of the ultrasound system for connecting to an external personal computer (PC) or workstation.

⚠ **WARNING:** Accessory equipment connected to the analog and digital interfaces must be certified according to the respective EN and IEC standards (e.g., EN 60950 and IEC 60950 for data processing equipment and EN 60601-1 and IEC 60601-1 for medical equipment). Furthermore, all configurations shall comply with the system standard EN 60601-1-1 and IEC 60601-1-1. Anyone who connects additional equipment to the signal input or signal output ports configures a medical system and is therefore responsible that the system complies with the requirements of the system standard EN 60601-1-1 and IEC 60601-1-1. Siemens can only guarantee the performance and safety of the devices listed in the *Instructions for Use*. If in doubt, consult the Siemens service department or your local Siemens representative.

Note: Siemens does not support or service any external devices connected to the RS-232C interface. Siemens does not assume responsibility for functionality beyond the scope of this specification.

Configuring the Port

Use the system presets to enable the transmission of data through the RS-232C serial port.

Peripheral > Video > External RS232C Port #1
Peripheral > Video > External RS232C Port #2

Note: Siemens does not specifically recommend any particular communication or analysis software; please contact a local vendor for assistance with interpretation and analysis of the data transmitted by the ultrasound imaging system.

Selection:	Options:	Allows you to:
Video		
External RS-232C Port #1 **External RS-232C Port #2**	**PC2**	Enable data transmission through the RS-232 serial port. When the RS-232 serial port is enabled, the system activates the **Send Report** button on the patient report.
	Off	Disable the RS-232 serial port. **Note:** Data transfer to the RS-232C port is available for Early OB, OB, and GYN reports only.

RS-232C Settings

- 1 start bit
- 8 data bits
- 1 stop bit
- Parity, none
- 9600 baud rate

Serial Port Pin Assignments

The following table indicates the pins used on a 9-pin D-Sub female connector on the ultrasound imaging system and the PC or printer, and a 9-pin D-Sub male connector on a connecting cable.

Ultrasound System Pin Number	Ultrasound System Signal Name
1	N/A
2	RXD (received data)
3	TXD (transmitted data)
4	DTR (data terminal ready)
5	SG (signal ground)
6	DSR (data set ready)
7	RTS (request to send)
8	CTS (clear to send)
9	N/A

Transmitting Report Data

Note: Use the system presets to select the **Peripheral** item and then the **PC2** setting for the **External RS-232C Port** setup option. You cannot transmit growth graphs with the **PC2** setting.

Peripheral > Video > External RS232C Port #1
Peripheral > Video > External RS232C Port #2

To begin transmitting data from the ultrasound imaging system, access the patient report by pressing the **Report** key and then press the **Send Report** button on the report screen.

Note: Data transfer to the RS-232C port is available for Early OB, OB, and GYN reports only.

The ultrasound system transmits the report to the destination device, including patient information (from the patient registration form) and the report measurement data.

See also: Sending Report Data through the RS-232 Port, Measurements and Calculations, Chapter B1, Features and Applications Reference

6 Cardiac References

Body Surface Area **3**

2D-Mode Measurements and Calculations **3**

Cardiac Index 3
Cardiac Output 3
Left Ventricular End-Diastolic Volume and Left Ventricular End-Systolic Volume 3
Teichholz Formula 3
Simpson Single Plane Formula 3
Simpson Bi-Plane 3
Ejection Fraction 3
Fractional Shortening 3
Stroke Index 3
Stroke Volume 3
Volume 3

M-Mode Measurements and Calculations **4**

Cardiac Index 4
Cardiac Output 4
Left Ventricular End-Diastolic Volume and Left Ventricular End-Systolic Volume 4
Teichholz Formula 4
Ejection Fraction 4
Fractional Shortening 4
AO/LA (Aorta/Left Atrium) Ratio 4
Heart Rate 4
Stroke Index 4
Stroke Volume 4

Doppler Mode Measurements and Calculations **5**

Doppler References 5
Acceleration Slope/Time 5
Deceleration Slope/Time 5
Pressure Half-Time 5
MVA (Mitral Valve Area Continuity Equation) 5
AVA (Aortic Valve Area) 5
Heart Rate 5
CO (Cardiac Output) 5
MV E/A (Mitral Valve, E point to A point Ratio) 5
MV A/E (Mitral Valve, A point to E point Ratio) 5
MV CA/CE (Mitral Valve, CA amplitude to CE amplitude Ratio) 5
IVRT (Isovolumic Relaxation Time) 6

LVIMP (Left Ventricular Index of Myocardial Performance) 6
RVIMP (Right Ventricular Index of Myocardial Performance) 6
Right Ventricular Systolic Pressure (RVSP) 6
TR V max (Tricuspid Regurgitant Jet Plus Right Atrial Pressure) 6
Max PG (Maximum Pressure Gradient) 6
Mean PG (Mean Pressure Gradient) 6
AV PG max (Aortic Valve maximum Pressure Gradient) 6
AV PG mean (Aortic Valve mean Pressure Gradient) 6
MV PG max (Mitral Valve maximum Pressure Gradient) 6
MV PG mean (Mitral Valve mean Pressure Gradient) 6
MR PG max (Mitral Regurgitation maximum Pressure Gradient) 6
PV PG max (Pulmonary Valve maximum Pressure Gradient) 6
PV PG mean (Pulmonary Valve mean Pressure Gradient) 7
TR PG max (Tricuspid Regurgitation maximum Pressure Gradient) 7
TR PG mean (Tricuspid Regurgitation mean Pressure Gradient) 7
TV PG max (Tricuspid Valve maximum Pressure Gradient) 7
TV PG mean (Tricuspid Valve mean Pressure Gradient) 7
LVOT PG max (Left Ventricular Outflow Tract maximum Pressure Gradient) 7
LVOT PG mean (Left Ventricular Outflow Tract mean Pressure Gradient) 7
VSD PG max (Ventricular Septal Defect maximum Pressure Gradient) 7

Additional Cardiac References 7
Left Atrial and Right Atrial Volumes 7
Left Ventricular Mass 7
Mitral Valve Area and Aortic Valve Area Using Continuity Equation with both the Peak Velocity and Velocity-time Integral 8

Body Surface Area

Du Bois D, Du Bois EF. "A Formula to Estimate the Approximate Surface Area if Height and Weight Be Known." *Archives of Internal Medicine* 17:863, 1916, as reprinted in *Nutrition* 5(5):303-311. 1989.

2D-Mode Measurements and Calculations

Cardiac Index

Berkow R, Editor. *The Merck Manual of Diagnosis and Therapy, 16th Edition.* Rahway, New Jersey: Merck and Co., 1992, p. 378.

Schiller NB, Shah PM, Crawford M, et al. "Recommendations for Quantitation of the Left Ventricle by Two-Dimensional Echocardiography." *Journal of the American Society of Echocardiography* 2(5):364, 1989.

Cardiac Output

Belenkie I, Nutter DO, Clark DW, McCraw DB, Raizner AE. "Assessment of Left Ventricular Dimensions and Function by Echocardiography." *American Journal of Cardiology* 31:755-762, June 1973.

Haites NE, McLennan FM, Mowat DHR, Rawles JM. "Assessment of Cardiac Output by Ultrasound Technique Alone." *British Heart Journal* 53:123-129, 1985.

Huntsman LL, Stewart DK, Barnes SR, Franklin SB, Colocousis JS, Hessel EA. "Noninvasive Doppler Determination of Cardiac Output in Man." *Circulation* 67(3):593-602, 1983.

Ihlen H, Amlie JP, Dale J, et. al. "Determination of cardiac output by Doppler echocardiography." *British Heart Journal* 51:54-60, 1984.

Left Ventricular End-Diastolic Volume and Left Ventricular End-Systolic Volume

Teichholz Formula

Teichholz LE, Kreulen T, Herman MV, Gorlin R. "Problems in Echocardiographic Volume Determinations: Echocardiographic-Angiographic Correlations in the Presence or Absence of Asynergy." *American Journal of Cardiology* 37(1):7-11, 1976.

Simpson Single Plane Formula

Schiller NB, Shah PM, Crawford M, et al. "Recommendations for Quantitation of the Left Ventricle by Two-Dimensional Echocardiography." *Journal of the American Society of Echocardiography* 2(5):364, 1989.

Simpson Bi-Plane

Schiller NB, Shah PM, Crawford M, et al. "Recommendations for Quantitation of the Left Ventricle by Two-Dimensional Echocardiography." *Journal of the American Society of Echocardiography* 2(5):364, 1989.

Ejection Fraction

Pombo JF, Troy BL, Russell RO. "Left Ventricular Volumes and Ejection Fraction by Echocardiography." *Circulation* 43:480-490, 1971.

Fractional Shortening

Belenkie I, Nutter DO, Clark DW, McCraw DB, Raizner AE. "Assessment of Left Ventricular Dimensions and Function by Echocardiography." *American Journal of Cardiology* 31:755-762, June 1973.

Stroke Index

Görge G, Erbel R, Brennecke R, Rupprecht HJ, Todt M, Meyer J. "High-Resolution Two-dimensional Echocardiography Improves the Quantification of Left Ventricular Function." *Journal of the American Society of Echocardiography* 5(2):125-134, 1992.

Stroke Volume

Görge G, Erbel R, Brennecke R, Rupprecht HJ, Todt M, Meyer J. "High-Resolution Two-dimensional Echocardiography Improves the Quantification of Left Ventricular Function." *Journal of the American Society of Echocardiography* 5(2):125-134, 1992.

Roelandt J. *Practical Echocardiography* Ultrasound in Biomedicine, No. 1. Research Studies Press (a division of John Wiley & Sons Ltd), 1977, p. 270.

Volume

Schiller NB, Shah PM, Crawford M, et al. "Recommendations for Quantitation of the Left Ventricle by Two-Dimensional Echocardiography." *Journal of the American Society of Echocardiography* 2(5):364, 1989.

M-Mode Measurements and Calculations

Cardiac Index

Berkow, R, Editor. *The Merck Manual of Diagnosis and Therapy, 16th Edition.* Rahway, New Jersey: Merck and Co., 1992, p. 378.

Schiller NB, Shah PM, Crawford M, et al. "Recommendations for Quantitation of the Left Ventricle by Two-Dimensional Echocardiography." *Journal of the American Society of Echocardiography* 2(5):364, 1989.

Cardiac Output

Belenkie I, Nutter DO, Clark DW, McCraw DB, Raizner AE. "Assessment of Left Ventricular Dimensions and Function by Echocardiography." *American Journal of Cardiology* 31:755-762, June 1973.

Haites NE, McLennan FM, Mowat DHR, Rawles JM. "Assessment of Cardiac Output by Ultrasound Technique Alone." *British Heart Journal* 53:123-129, 1985.

Huntsman LL, Stewart DK, Barnes SR, Franklin SB, Colocousis JS, Hessel EA. "Noninvasive Doppler Determination of Cardiac Output in Man." *Circulation* 67(3):593-602, 1983.

Ihlen H, Amlie JP, Dale J, et. al. "Determination of cardiac output by Doppler echocardiography." *British Heart Journal* 51:54-60, 1984.

Left Ventricular End-Diastolic Volume and Left Ventricular End-Systolic Volume

Teichholz Formula

Teichholz LE, Kreulen T, Herman MV, Gorlin R. "Problems in Echocardiographic Volume Determinations: Echocardiographic-Angiographic Correleations in the Presence or Absence of Asynergy." *American Journal of Cardiology* 37(1):7-11, 1976.

Ejection Fraction

Pombo JF, Troy BL, Russell RO. "Left Ventricular Volumes and Ejection Fraction by Echocardiography." *Circulation* 43:480-490, 1971.

Fractional Shortening

Belenkie I, Nutter DO, Clark DW, McCraw DB, Raizner AE. "Assessment of Left Ventricular Dimensions and Function by Echocardiography." *American Journal of Cardiology* 31:755-762, June 1973.

AO/LA (Aorta/Left Atrium) Ratio

Schiller NB, Shah PM, Crawford M, et al. "Recommendations for Quantitation of the Left Ventricle by Two-Dimensional Echocardiography." *Journal of the American Society of Echocardiography* 2(5):364, 1989.

Roelandt J. Practical Echocardiography in Ultrasound in Biomedicine, No. 1. Letchworth, Herts, England: Research Studies Press (a division of John Wiley & Sons Ltd), 1977, p. 270.

Heart Rate

Urdang, L Ed. *Mosby's Medical & Nursing Dictionary.* St. Louis, Missouri: The C.V. Mosby Company, 1983, p. 492.

Stroke Index

Görge G, Erbel R, Brennecke R, Rupprecht HJ, Todt M, Meyer J. "High-Resolution Two-dimensional Echocardiography Improves the Quantification of Left Ventricular Function." *Journal of the American Society of Echocardiography* 5(2):125-134, 1992.

Stroke Volume

Görge G, Erbel R, Brennecke R, Rupprecht HJ, Todt M, Meyer J. "High-Resolution Two-dimensional Echocardiography Improves the Quantification of Left Ventricular Function." *Journal of the American Society of Echocardiography* 5(2):125-134, 1992.

Roelandt J. Practical Echocardiography in Ultrasound in Biomedicine, No. 1. Letchworth, Herts, England: Research Studies Press (a division of John Wiley & Sons Ltd), 1977, p. 270.

Doppler Mode Measurements and Calculations

Doppler References

Burns PN. "The Physical Principles of Doppler and Spectral Analysis." *Journal of Clinical Ultrasound,* 15:567-590, 1987.

Acceleration Slope/Time

Gardin JM, Burn CS, Childs WJ, Henry WL. "Evaluation of blood flow velocity in the ascending aorta and main pulmonary artery of normal subjects by Doppler echocardiography." *American Heart Journal*, 107(2):310-319, 1984.

Deceleration Slope/Time

Gardin JM, Burn CS, Childs WJ, Henry WL. "Evaluation of blood flow velocity in the ascending aorta and main pulmonary artery of normal subjects by Doppler echocardiography." *American Heart Journal*, 107(2):310-319, 1984.

Pressure Half-Time

Hatle L, Angelsen B, Tromsdal A. "Noninvasive Assessment of Atrioventricular Pressure Half-time by Doppler Ultrasound" *Circulation* 60(5):1096-1103, 1979.

MVA (Mitral Valve Area Continuity Equation)

Hatle L, Angelsen B, Tromsdal A. "Noninvasive Assessment of Atrioventricular Pressure Half-time by Doppler Ultrasound" *Circulation* 60(5):1096-1103, 1979.

AVA (Aortic Valve Area)

Oh JK, Taliercio CP, Holmes DR, et. al. "Prediction of the Severity of Aortic Stenosis by Doppler Aortic Valve Area Determination: Prospective Doppler-Catheterization Correlation in 100 Patients." *Journal of the American College of Cardiology* 11(6):1227-1234, 1988.

Richards KL, Cannon SR, Miller JF, Crawford MH. "Calculation of aortic valve area by Doppler echocardiography: a direct application of the continuity equation." *Circulation* 73(5):964-969, 1986.

Heart Rate

Urdang, L Ed. *Mosby's Medical & Nursing Dictionary.* St. Louis, Missouri: The C.V. Mosby Company, 1983, p. 492.

Cohn PF, Brown EJ, Vlay SC. *Clinical Cardiovascular Physiology.* Philadelphia, Pennsylvania: W.B. Saunders Company, 1985, pp. 85-86.

CO (Cardiac Output)

Calafiore P, Stewart WJ. "Doppler Echocardiographic Quantitation of Volumetric Flow Rate." *Cardiology Clinics* 8(2):191-202, 1990.

Haites NE, McLennan FM, Mowat DHR, Rawles JM. "Assessment of Cardiac Output by Ultrasound Technique Alone." *British Heart Journal* 53:123-129, 1985.

Huntsman LL, Stewart DK, Barnes SR, Franklin SB, Colocousis JS, Hessel EA. "Noninvasive Doppler Determination of Cardiac Output in Man." *Circulation* 67(3):593-602, 1983.

Ihlen H, Amlie JP, Dale J, et. al. "Determination of cardiac output by Doppler echocardiography." *British Heart Journal* 51:54-60, 1984.

Magnin PA, Stewart JA, Myers S, von Ramm O, Kisslo JA. "Combined Doppler and Phased-array Echocardiographic Estimation of Cardiac Output." *Circulation* 63(2):388-392, 1981.

MV E/A (Mitral Valve, E point to A point Ratio)

Maron BJ, Spirito P, Green KJ, Wesley YE, Bonow RO, Arce J. "Noninvasive Assessment of Left Ventricular Diastolic Function by Pulsed Doppler Echocardiography in Patients with Hypertrophic Cardiomyopathy." *Journal of the American College of Cardiology* 10(4):733-742, 1987.

MV A/E (Mitral Valve, A point to E point Ratio)

Maron BJ, Spirito P, Green KJ, Wesley YE, Bonow RO, Arce J. "Noninvasive Assessment of Left Ventricular Diastolic Function by Pulsed Doppler Echocardiography in Patients with Hypertrophic Cardiomyopathy." *Journal of the American College of Cardiology* 10(4):733-742, 1987.

MV CA/CE (Mitral Valve, CA amplitude to CE amplitude Ratio)

Maron BJ, Spirito P, Green KJ, Wesley YE, Bonow RO, Arce J. "Noninvasive Assessment of Left Ventricular Diastolic Function by Pulsed Doppler Echocardiography in Patients with Hypertrophic Cardiomyopathy." *Journal of the American College of Cardiology* 10(4):733-742, 1987.

IVRT (Isovolumic Relaxation Time)

Hatle L, Angelsen B, Tromsdal A. "Non-invasive estimation of pulmonary artery systolic pressure with Doppler ultrasound" *British Heart Journal* 45:157-165, 1981.

Stevenson, JG. "Comparison of Several Noninvasive Methods for Estimation of Pulmonary Artery Pressure." *Journal of the American Society of Echocardiography,* 2(3):157-166, 1989.

LVIMP (Left Ventricular Index of Myocardial Performance)

Tei C, Ling LH, Hodge DO, Bailey KR, Oh JK, Rodeheffer RJ, Tajik AJ, Seward JB. "New Index of Combined Systolic and Diastolic Myocardial Performance: A Simple and Reproducible Measure of Cardiac Function – A Study in Normals and Dilated Cardiomyopathy." *Journal of Cardiology*, 26:357-366, 1995.

RVIMP (Right Ventricular Index of Myocardial Performance)

Tei C, Dujardin KS, Hodge DO, et al. "Doppler echocardiographic index for assessment of global right ventricular function." *Journal American Society of Echocardiography*, 9:838-847, 1996.

Right Ventricular Systolic Pressure (RVSP)

Yock PG, Popp RL. "Noninvasive estimation of right ventricular systolic pressure by Doppler ultrasound in patients with tricuspid regurgitation." *Circulation* 70(4):657-662*,* 1984.

TR V max (Tricuspid Regurgitant Jet Plus Right Atrial Pressure)

Yock PG, Popp RL. "Noninvasive estimation of right ventricular systolic pressure by Doppler ultrasound in patients with tricuspid regurgitation." *Circulation* 70(4):657-662*,* 1984.

Max PG (Maximum Pressure Gradient)

Yoganathan AP, Cape EG, Sung H, Williams FP, Jimoh A. "Review of Hydrodynamic Principles for the Cardiologist: Applications to the Study of Blood Flow and Jets by Imaging Techniques." *Journal of the American College of Cardiology*, 12(5):1344-1353, 1988.

Mean PG (Mean Pressure Gradient)

Yoganathan AP, Cape EG, Sung H, Williams FP, Jimoh A. "Review of Hydrodynamic Principles for the Cardiologist: Applications to the Study of Blood Flow and Jets by Imaging Techniques." *Journal of the American College of Cardiology*, 12(5):1344-1353, 1988.

AV PG max (Aortic Valve maximum Pressure Gradient)

Yoganathan AP, Cape EG, Sung H, Williams FP, Jimoh A. "Review of Hydrodynamic Principles for the Cardiologist: Applications to the Study of Blood Flow and Jets by Imaging Techniques." *Journal of the American College of Cardiology*, 12(5):1344-1353, 1988.

AV PG mean (Aortic Valve mean Pressure Gradient)

Yoganathan AP, Cape EG, Sung H, Williams FP, Jimoh A. "Review of Hydrodynamic Principles for the Cardiologist: Applications to the Study of Blood Flow and Jets by Imaging Techniques." *Journal of the American College of Cardiology*, 12(5):1344-1353, 1988.

MV PG max (Mitral Valve maximum Pressure Gradient)

Yoganathan AP, Cape EG, Sung H, Williams FP, Jimoh A. "Review of Hydrodynamic Principles for the Cardiologist: Applications to the Study of Blood Flow and Jets by Imaging Techniques." *Journal of the American College of Cardiology*, 12(5):1344-1353, 1988.

MV PG mean (Mitral Valve mean Pressure Gradient)

Yoganathan AP, Cape EG, Sung H, Williams FP, Jimoh A. "Review of Hydrodynamic Principles for the Cardiologist: Applications to the Study of Blood Flow and Jets by Imaging Techniques." *Journal of the American College of Cardiology*, 12(5):1344-1353, 1988.

MR PG max (Mitral Regurgitation maximum Pressure Gradient)

Yoganathan AP, Cape EG, Sung H, Williams FP, Jimoh A. "Review of Hydrodynamic Principles for the Cardiologist: Applications to the Study of Blood Flow and Jets by Imaging Techniques." *Journal of the American College of Cardiology*, 12(5):1344-1353, 1988.

PV PG max (Pulmonary Valve maximum Pressure Gradient)

Yoganathan AP, Cape EG, Sung H, Williams FP, Jimoh A. "Review of Hydrodynamic Principles for the Cardiologist: Applications to the Study of Blood Flow and Jets by Imaging Techniques." *Journal of the American College of Cardiology*, 12(5):1344-1353, 1988.

PV PG mean (Pulmonary Valve mean Pressure Gradient)

Yoganathan AP, Cape EG, Sung H, Williams FP, Jimoh A. "Review of Hydrodynamic Principles for the Cardiologist: Applications to the Study of Blood Flow and Jets by Imaging Techniques." *Journal of the American College of Cardiology*, 12(5):1344-1353, 1988.

TR PG max (Tricuspid Regurgitation maximum Pressure Gradient)

Yoganathan AP, Cape EG, Sung H, Williams FP, Jimoh A. "Review of Hydrodynamic Principles for the Cardiologist: Applications to the Study of Blood Flow and Jets by Imaging Techniques." Journal of the American College of Cardiology, 12(5):1344-1353, 1988.

TR PG mean (Tricuspid Regurgitation mean Pressure Gradient)

Yoganathan AP, Cape EG, Sung H, Williams FP, Jimoh A. "Review of Hydrodynamic Principles for the Cardiologist: Applications to the Study of Blood Flow and Jets by Imaging Techniques." *Journal of the American College of Cardiology*, 12(5):1344-1353, 1988.

TV PG max (Tricuspid Valve maximum Pressure Gradient)

Yoganathan AP, Cape EG, Sung H, Williams FP, Jimoh A. "Review of Hydrodynamic Principles for the Cardiologist: Applications to the Study of Blood Flow and Jets by Imaging Techniques." *Journal of the American College of Cardiology*, 12(5):1344-1353, 1988.

TV PG mean (Tricuspid Valve mean Pressure Gradient)

Yoganathan AP, Cape EG, Sung H, Williams FP, Jimoh A. "Review of Hydrodynamic Principles for the Cardiologist: Applications to the Study of Blood Flow and Jets by Imaging Techniques." *Journal of the American College of Cardiology*, 12(5):1344-1353, 1988.

LVOT PG max (Left Ventricular Outflow Tract maximum Pressure Gradient)

Yoganathan AP, Cape EG, Sung H, Williams FP, Jimoh A. "Review of Hydrodynamic Principles for the Cardiologist: Applications to the Study of Blood Flow and Jets by Imaging Techniques." *Journal of the American College of Cardiology*, 12(5):1344-1353, 1988.

LVOT PG mean (Left Ventricular Outflow Tract mean Pressure Gradient)

Yoganathan AP, Cape EG, Sung H, Williams FP, Jimoh A. "Review of Hydrodynamic Principles for the Cardiologist: Applications to the Study of Blood Flow and Jets by Imaging Techniques." *Journal of the American College of Cardiology*, 12(5):1344-1353, 1988.

VSD PG max (Ventricular Septal Defect maximum Pressure Gradient)

Yoganathan AP, Cape EG, Sung H, Williams FP, Jimoh A. "Review of Hydrodynamic Principles for the Cardiologist: Applications to the Study of Blood Flow and Jets by Imaging Techniques." *Journal of the American College of Cardiology*, 12(5):1344-1353, 1988.

Additional Cardiac References

Left Atrial and Right Atrial Volumes

Schabelman SE, Schiller NB, Anschultz RA, et al. "Comparison of Four Two-Dimensional Echocardiographic Views for Measuring Left Atrial Size." *American Journal of Cardiology* 41:391-6, 1978.

Bommer W, Weinert L, Neumann A, et al. "Determination of Right Atrial and Right Ventricular Size by Two-Dimensional Echocardiography." Circulation 60(1):91-100. 1979.

Lambertz H, Flachskampf FA, Heiliger R, et al. "New Echocardiographic and Angiographic Methods for Right Atrial Volume Determination: In Vitro Validation and In Vivo Results." *International Journal of Cardiac Imaging* 5(1):39-51, 1989.

Wang Y, Gutman JM, Heilbron D, et al. "Atrial Volume in a Normal Adult Population by Two-Dimensional Echocardiography." *Chest* 86(4):595-601, 1984.

Left Ventricular Mass

Bommer W, Weinert L, Neumann A, et al. "Determination of Right Atrial and Right Ventricular Size by Two-Dimensional Echocardiography." *Circulation* 60(1):91-100. 1979.

Reichek N, Helak J, Plappert T, et al. "Anatomic Validation of Left Ventricular Mass Estimates from Clinical Two-Dimensional Echocardiography: Initial Results." *Circulation* 67(2):348-52, 1983.

Mitral Valve Area and Aortic Valve Area Using Continuity Equation with both the Peak Velocity and Velocity-time Integral

Gossler KB, Goldberg SJ. "Velocity Gradients Across Normal Cardiac Valves." *American Journal of Cardiology* 67(1):99-101, 1991.

Hatle L, Angelsen B. *Doppler Ultrasound in Cardiology: Physical Principles and Clinical Applications, 2nd edition.* Philadelphia, Pennsylvania: Lea & Febiger, 1985.

Skjaerpe T, Hegrenaes L, Hatle L. "Noninvasive Estimation of Valve Area in Patients with Aortic Stenosis by Doppler Ultrasound and Two-Dimensional Echocardiography." *Circulation* 72(4):810-8, 1985.

Stamm RB, Martin RP. "Quantification of Pressure Gradients Across Stenotic Valves by Doppler Ultrasound." *Journal of the American College of Cardiology* 2(4):707-18, 1983.

Young JB, Quinones MA, Waggoner AD, et al. "Diagnosis and Quantification of Aortic Stenosis with Pulsed Doppler Echocardiography." *American Journal of Cardiology* 45(5):987-94, 1980.

Berger M, Berdoff RL, Gallerstein PE, et al. "Evaluation of Aortic Stenosis by Continuous Wave Doppler Ultrasound." *Journal of the American College of Cardiology* 3(1):150-6, 1984.

Nishimura RA, Tajik AJ. "Quantitative Hemodynamics by Doppler Echocardiography: A Noninvasive Alternative to Cardiac Catheterization." *Progress in Cardiovascular Diseases* 36(4):309-42, 1994.

Otto CM, Pearlman AS, Gardner CL, et al. "Simplification of the Doppler Continuity Equation for Calculating Stenotic Aortic Valve Area." *Journal of the American Society of Echocardiography* 1(2):155-7, 1988.

Taylor R. "Evolution of the Continuity Equation in the Doppler Echocardiographic Assessment of the Severity of Valvular Aortic Stenosis." *Journal of the American Society of Echocardiography* 3(4):326-30, 1990.

Otto CM, Pearlman AS, Comess KA, et al. "Determination of the Stenotic Aortic Valve Area in Adults Using Doppler Echocardiography." *Journal of the American College of Cardiology* 7(3):509-17, 1986.

Zoghbi WA, Farmer KL, Soto JG, et al. "Accurate Noninvasive Quantification of Stenotic Aortic Valve Area by Doppler Echocardiography." Circulation 73(3):452-9, 1986.

Oh JK, Taliercio CP, Holmes DR, et. al. "Prediction of the Severity of Aortic Stenosis by Doppler Aortic Valve Area Determination: Prospective Doppler-Catheterization Correlation in 100 Patients." *Journal of the American College of Cardiology* 11(6):1227-1234, 1988.

Nishimura RA, Tajik AJ. "Quantitative Hemodynamics by Doppler Echocardiography: A Noninvasive Alternative to Cardiac Catheterization." *Progress in Cardiovascular Diseases* 36(4):309-42, 1994.

Wranne B, Ask P, Loyd D. "Analysis of Different Methods of Assessing the Stenotic Mitral Valve Area with Emphasis on the Pressure Gradient Half-Time Concept." *American Journal of Cardiology* 66(5):614-20, 1990.

Labovitz A. "Pressure Halftime, Deceleration Rate." *American Heart Journal* 8:1341-7, 1986.

Loperfido F, Laurenzi F, Gimigliano F, et al. "A Comparison of the Assessment of Mitral Valve Area by Continuous Wave Doppler and by Cross Sectional Echocardiography. *British Heart Journal* 57(4):348-55, 1987.

Nakatani S, Masuyama T, Kodama K, et al. "Value and Limitations of Doppler Echocardiography in the Quantification of Stenotic Mitral Valve Area: Comparison of the Pressure Half-Time and the Continuity Equation Methods. *Circulation* 77(1):78-85, 1988.

Thomas JD, Weyman AE. "Doppler Mitral Pressure Half-Time: A Clinical Tool in Search of Theoretical Justification." *Journal of the American College of Cardiology* 10(4):923-9, 1987.

Holen J, Aaslid R, Landmark K, et al. "Determination of Effective Orifice Area in Mitral Stenosis from Non-Invasive Ultrasound Doppler Data and Mitral Flow Rate." *Acta Medica Scandinavica* 201(1-2):83-8, 1977.

7 Obstetrical References

Obstetrical References 3
- Mean Gestational Sac Diameter 3
- Gestational Sac 3
- Crown Rump Length 3
- Biparietal Diameter 3
- Occipital Frontal Diameter 4
- Abdominal Transverse Diameter 4
- Abdominal Sagittal Diameter 4
- Fractional Shortening 4
- Fetal Weight Estimation 4
- Head Circumference 4
- Abdominal Circumference 4
- AXT 4
- Fetal Trunk Area 4
- Femur Length 5
- Humerus Length 5
- Ulna Length 5
- Binocular Distance 5
- Tibia Length 5
- Foot Length 5

Growth Analysis Ratios and Indexes 5
- Head Circumference/Abdominal Circumference Ratio 5
- Femur Length/Abdominal Circumference Ratio 5
- Femur Length/Biparietal Diameter Ratio 5
- Cephalic Index 5
- Fetal Weight Estimation 6

Menstrual Age by Ultrasound and Estimated Date of Confinement 6
- CLINICAL MA - Clinical Menstrual Age 6
- US MA - Composite Menstrual Age Estimation by Ultrasound 6
- Simple Average - US MA(ave) 6
- Regression Equations, Hadlock 6
- CLINICAL EDC - Estimated Date of Confinement by Last Menstrual Period. 6
- US EDC Estimated Date of Confinement by Ultrasound 6

Parameters for Growth Analysis Graphs 6
- Mean Gestational Sac Diameter 6
- Gestational Sac 6
- Crown Rump Length 6
- Biparietal Diameter 7
- Biparietal Diameter (Outer to Inner) 7
- Biparietal Diameter (Outer to Outer) 7
- Occipital Frontal Diameter 7

Head Circumference 7
Head Circumference (Plotted) 7
Abdominal Circumference 8
Abdominal Circumference (Plotted) 8
AXT 8
Fetal Trunk Area 8
Femur Length 8
Humerus Length 9
Ulna Length 9
Tibia Length 9
Foot Length 9
Thoracic Circumference 9
Clavicle Length 9
Renal Length 9
Renal Anterior Posterior 9
Umbilical Artery (Resistive Index) 9
Umbilical Artery (Pulsatility Index) 10
Middle Cerebral Artery (Resistive Index) 10
Middle Cerebral Artery (Pulsatility Index) 10

Estimated Fetal Weight (EFW) for Growth Analysis Graphs 10

Ratios and Indices for Growth Analysis Graphs 10
AFI (Amniotic Fluid Index) 10
LVW/HW (Lateral Ventricular Width/Hemispheric Width) Ratio 10
TCD/AC Ratio 10

Other Calculations 10
Corrected BPD 10

Obstetrical References

Mean Gestational Sac Diameter

Hellman LM, Kobayashi M, Fillisti L, Lavenhar M, Cromb E. "Growth and development of the human fetus prior to the twentieth week of gestation." American Journal of Obstetrics and Gynecology 103(6):789, 1969.

Rempen A. "Biometrie in der Frühgravidität (I. Trimenon) (Biometry in Early Pregnancy (1st Trimester))." Der Frauenarzt 32:425, 1991.

Gestational Sac

Osaka:

Aoki M, Yamada M. "Examining Fetal Growth." Obstetrics and Gynecology 47:547-556, 1983.

Tokyo:

Masuda H, Shinozuka N, Okai T, Mizuno M. "Diagnosis of the Week of Pregnancy and Prognosis." Perinatal Care 8:719-726.

Crown Rump Length

Hadlock FP, Shah YP, Kanon DJ, Lindsey JV. "Fetal Crown-Rump Length: Reevaluation of Relation to Menstrual Age (5-18 weeks) with High-Resolution Real-Time US." Radiology 182(2):501, 1992.

Hansmann M, Hackelöer B-J, Staudach A. Ultrasound Diagnosis in Obstetrics and Gynecology. New York: Springer-Verlag, 1985, p. 439.

Lasser DM, Peisner DB, Vollebergh J, Timor-Tritsch I. "First-trimester fetal biometry using transvaginal sonography." Ultrasound in Obstetrics and Gynecology 3:104, 1993.

Robinson HP and Fleming JEE. "A critical evaluation of sonar 'crown-rump length' measurements." British Journal of Obstetrics and Gynaecology 82:702, 1975.

ASUM:

Westerway SC. "Ultrasonic Fetal Measurements: New Australian Standards for the New Millennium." Aust NZ J Obstet Gynaecol 40:3:297-302, 2000.

JSUM:

Japan Society of Ultrasonics in Medicine. "Standardization of Fetometry and Official Announcement of Diagnostic Guidelines." J. Med. Ultrasonics 30:415-440, 2003.

Osaka:

Aoki M, Yamada M. "Examining Fetal Growth." Obstetrics and Gynecology 47:547-556, 1983.

Tokyo:

Masuda H, Shinozuka N, Okai T, Mizuno M. "Diagnosis of the Week of Pregnancy and Prognosis." Perinatal Care 8:719-726.

Biparietal Diameter

Hadlock FP, Deter RL, Harrist RB, Park SK. "Estimating Fetal Age: Computer-Assisted Analysis of Multiple Fetal Growth Parameters." Radiology 152:497, 1984.

Lasser DM, Peisner DB, Vollebergh J, Timor-Tritsch I. "First-trimester fetal biometry using transvaginal sonography." Ultrasound in Obstetrics and Gynecology 3:104, 1993.

Merz E. Ultrasound in Gynecology and Obstetrics. Stuttgart and New York: Thieme Medical Publishers, Inc., 1991, p. 326.

Rempen A. "Biometrie in der Frühgravidität (I. Trimenon) (Biometry in Early Pregnancy (1st Trimester))." Der Frauenarzt 32:425, 1991.

ASUM:

Westerway SC. "Ultrasonic Fetal Measurements: New Australian Standards for the New Millennium." Aust NZ J Obstet Gynaecol 40:3:297-302, 2000.

JSUM:

Japan Society of Ultrasonics in Medicine. "Standardization of Fetometry and Official Announcement of Diagnostic Guidelines." J. Med. Ultrasonics 30:415-440, 2003.

Osaka:

Aoki M, Yamada M. "Examining Fetal Growth." Obstetrics and Gynecology 47:547-556, 1983.

Tokyo:

Masuda H, Shinozuka N, Okai T, Mizuno M. "Diagnosis of the Week of Pregnancy and Prognosis." Perinatal Care 8:719-726.

Occipital Frontal Diameter

ASUM

Westerway SC. "Ultrasonic Fetal Measurements: New Australian Standards for the New Millennium." Aust NZ J Obstet Gynaecol 40:3:297-302, 2000.

Abdominal Transverse Diameter

Merz E, Wellek S. "Normal Fetal Growth Profile – A Uniform Model for Calculating Normal Current Head and Abdomen Parameters and Long Limb Bones." Ultraschall in der Medizin 17(4):153-162, 1996.

Abdominal Sagittal Diameter

Merz E, Wellek S. "Normal Fetal Growth Profile – A Uniform Model for Calculating Normal Current Head and Abdomen Parameters and Long Limb Bones." Ultraschall in der Medizin 17(4):153-162, 1996.

Fractional Shortening

Cyr DR, Guntheroth WG, Mack LA. "Fetal Echocardiography." In: Berman MC (ed.) Diagnostic Medical Sonography, Vol I: Obstetrics and Gynecology, 249-271, 1991.

Fetal Weight Estimation

JSUM:

Japan Society of Ultrasonics in Medicine. "Standardization of Fetometry and Official Announcement of Diagnostic Guidelines." J. Med. Ultrasonics 30:415-440, 2003.

Osaka:

Aoki M, Yamada M. "Examining Fetal Growth." Obstetrics and Gynecology 47:547-556, 1983.

Tokyo:

Masuda H, Shinozuka N, Okai T, Mizuno M. "Diagnosis of the Week of Pregnancy and Prognosis." Perinatal Care 8:719-726.

Head Circumference

Hadlock FP, Deter RL, Harrist RB, Park SK. "Estimating Fetal Age: Computer-Assisted Analysis of Multiple Fetal Growth Parameters." Radiology 152:497, 1984.

Lasser DM, Peisner DB, Vollebergh J, Timor-Tritsch I. "First-trimester fetal biometry using transvaginal sonography." Ultrasound in Obstetrics and Gynecology 3:104, 1993.

Merz E. Ultrasound in Gynecology and Obstetrics. Stuttgart and New York: Thieme Medical Publishers, Inc., 1991, p. 326.

Abdominal Circumference

Hadlock FP, Deter RL, Harrist RB, Park SK. "Estimating Fetal Age: Computer-Assisted Analysis of Multiple Fetal Growth Parameters." Radiology 152:497, 1984.

Lasser DM, Peisner DB, Vollebergh J, Timor-Tritsch I. "First-trimester fetal biometry using transvaginal sonography." Ultrasound in Obstetrics and Gynecology 3:104, 1993.

Merz E. Ultrasound in Gynecology and Obstetrics. Stuttgart and New York: Thieme Medical Publishers, Inc., 1991, p. 326.

JSUM:

Japan Society of Ultrasonics in Medicine. "Standardization of Fetometry and Official Announcement of Diagnostic Guidelines." J. Med. Ultrasonics 30:415-440, 2003.

AXT

JSUM:

Japan Society of Ultrasonics in Medicine. "Standardization of Fetometry and Official Announcement of Diagnostic Guidelines." J. Med. Ultrasonics 30:415-440, 2003.

Tokyo:

Masuda H, Shinozuka N, Okai T, Mizuno M. "Diagnosis of the Week of Pregnancy and Prognosis." Perinatal Care 8:719-726.

Fetal Trunk Area

Osaka:

Aoki M, Yamada M. "Examining Fetal Growth." Obstetrics and Gynecology 47:547-556, 1983.

Femur Length

Hadlock FP, Deter RL, Harrist RB, Park SK. "Estimating Fetal Age: Computer-Assisted Analysis of Multiple Fetal Growth Parameters." Radiology 152:497, 1984.

Jeanty P, Rodesch F, Delbeke D, Dumont JE. "Estimation of Gestational Age from Measurements of Fetal Long Bones." Journal of Ultrasound in Medicine 3:75, 1984.

Merz E. Ultrasound in Gynecology and Obstetrics. Stuttgart and New York: Thieme Medical Publishers, Inc., 1991, p. 326.

JSUM:

Japan Society of Ultrasonics in Medicine. "Standardization of Fetometry and Official Announcement of Diagnostic Guidelines." J. Med. Ultrasonics 30:415-440, 2003.

Osaka:

Aoki M, Yamada M. "Examining Fetal Growth." Obstetrics and Gynecology 47:547-556, 1983.

Tokyo:

Masuda H, Shinozuka N, Okai T, Mizuno M. "Diagnosis of the Week of Pregnancy and Prognosis." Perinatal Care 8:719-726.

Humerus Length

Jeanty P, Rodesch F, Delbeke D, Dumont JE. "Estimation of Gestational Age from Measurements of Fetal Long Bones." Journal of Ultrasound in Medicine 3:75, 1984.

Osaka:

Aoki M, Yamada M. "Examining Fetal Growth." Obstetrics and Gynecology 47:547-556, 1983.

Ulna Length

Jeanty P, Rodesch F, Delbeke D, Dumont JE. "Estimation of Gestational Age from Measurements of Fetal Long Bones." Journal of Ultrasound in Medicine 3:75, 1984.

Binocular Distance

Jeanty P, Cantraine F, Cousaert E, Romero R, Hobbins JC. "The Binocular Distance: A New Way to Estimate Fetal Age." Journal of Ultrasound in Medicine 3:241, 1984.

Tongsong T, Wanapirak C, Jesadapornchai S, Tathayathikom E. "Fetal binocular distance as a predictor of menstrual age." International Journal of Gynecology and Obstetrics 38:87, 1992.

Tibia Length

Jeanty P, Rodesch F, Delbeke D, Dumont JE. "Estimation of Gestational Age from Measurements of Fetal Long Bones." Journal of Ultrasound in Medicine 3:75, 1984.

Foot Length

Mercer BM, Sklar S, Shariatmadar A, Gillieson MS, Dalton ME. "Fetal foot length as a predictor of gestational age." *American Journal of Obstetrics and Gynecology* 156(2):350, 1987.

Growth Analysis Ratios and Indexes

Head Circumference/Abdominal Circumference Ratio

Campbell S, Thoms A. "Ultrasound measurement of the fetal head to abdomen circumference ratio in the assessment of growth retardation." British Journal of Obstetrics and Gynaecology, 84:165, 1977.

Femur Length/Abdominal Circumference Ratio

Hadlock FP, Deter RL, Harrist RB, Roecker E, Park SK. "A Date-Independent Predictor of Intrauterine Growth Retardation: Femur Length/Abdominal Circumference Ratio." American Journal of Roentgenology 141: 979, 1983.

Femur Length/Biparietal Diameter Ratio

Hohler CW, Quetel TA. "Comparison of ultrasound femur length and biparietal diameter in late pregnancy." *American Journal of Obstetrics and Gynecology* 141(7):759, 1981.

Cephalic Index

Chitty, LS, Altman, DG, "Charts of Fetal Size: 2. Head Measurements," *British Journal of Obstetrics & Gynaecology* 101:35-43, 1994.

Hadlock FP, Deter RL, Carpenter RJ, Park SK. "Estimating Fetal Age: Effect of Head Shape on BPD." *American Journal of Roentgenology* 137:83, 1981.

Fetal Weight Estimation

Hadlock FP, Harrist RB, Sharman RS, Deter RL, Park SK. "Estimation of fetal weight with the use of head, body, and femur measurements—A prospective study." *American Journal of Obstetrics and Gynecology* 151:333, 1985.

Hansmann M, Hackelöer B-J, Staudach A. *Ultrasound Diagnosis in Obstetrics and Gynecology*. New York: Springer-Verlag, 1986.

Merz E. *Ultrasound in Gynecology and Obstetrics*. Stuttgart and New York: Thieme Medical Publishers, Inc., 1991, p. 157.

Shepard MJ, Richards VA, Berkowitz RL, Warsof SL, Hobbins JC. "An evaluation of two equations for predicting fetal weight by ultrasound." *American Journal of Obstetrics and Gynecology.* 142(1):47, 1982.

Menstrual Age by Ultrasound and Estimated Date of Confinement

CLINICAL MA - Clinical Menstrual Age

Source data for Clinical MA is determined by the user during the Patient ID operation calculated weeks and days since LMP.

US MA - Composite Menstrual Age Estimation by Ultrasound

Simple Average - US MA(ave)

The sum of all menstrual ages determined by single parameter tables/formulas, divided by the number of parameters summed.

Regression Equations, Hadlock

Hadlock FP, Deter RL, Harrist RB, Park SK. "Estimating Fetal Age: Computer-Assisted Analysis of Multiple Fetal Growth Parameters." *Radiology* 152:497, 1984.

CLINICAL EDC - Estimated Date of Confinement by Last Menstrual Period

280 days added to date of **LMP** date.

US EDC Estimated Date of Confinement by Ultrasound

280 days - today's **US MA** (in days), add to today's date = **US EDC**

Parameters for Growth Analysis Graphs

The references in this section are used to analyze fetal growth by plotting a measured parameter against clinical menstrual age. The plotted points are displayed on a graph that indicates the 5%, 50%, and 95% for an expected parameter measurement determined by a function using menstrual age.

Mean Gestational Sac Diameter

Rempen A. "Biometrie in der Frühgravidität (I. Trimenon) (Biometry in Early Pregnancy (1st Trimester))." *Der Frauenarzt* 32:425, 1991.

Gestational Sac

Tokyo:

Masuda H, Shinozuka N, Okai T, Mizuno M. "Diagnosis of the Week of Pregnancy and Prognosis." *Perinatal Care* 8:719-726.

Crown Rump Length

Hadlock FP, Shah YP, Kanon DJ, Lindsey JV. "Fetal Crown-Rump Length: Reevaluation of Relation to Menstrual Age (5-18 weeks) with High-Resolution Real-Time US." *Radiology* 182(2):501, 1992.

Hansmann M, Hackelöer B-J, Staudach A. *Ultrasound Diagnosis in Obstetrics and Gynecology*. New York: Springer-Verlag, 1985.

Rempen A. "Biometrie in der Frühgravidität (I. Trimenon) (Biometry in Early Pregnancy (1st Trimester))." *Der Frauenarzt* 32:425, 1991, p. 427.

Robinson HP and Fleming JEE. "A critical evaluation of sonar 'crown-rump length' measurements." *British Journal of Obstetrics and Gynaecology* 82:702, 1975.

ASUM:

Westerway SC. "Ultrasonic Fetal Measurements: New Australian Standards for the New Millennium." *Aust NZ J Obstet Gynaecol* 40:3:297-302, 2000.

JSUM:

Japan Society of Ultrasonics in Medicine. "Standardization of Fetometry and Official Announcement of Diagnostic Guidelines." *J. Med. Ultrasonics* 30:415-440, 2003.

Osaka:

Aoki M, Yamada M. "Examining Fetal Growth." *Obstetrics and Gynecology* 47:547-556, 1983.

Tokyo:

Masuda H, Shinozuka N, Okai T, Mizuno M. "Diagnosis of the Week of Pregnancy and Prognosis." *Perinatal Care* 8:719-726.

Biparietal Diameter

Hadlock FP, Deter RL, Harrist RB, Park SK. "Estimating Fetal Age: Computer-Assisted Analysis of Multiple Fetal Growth Parameters." *Radiology* 152:497, 1984.

Hansmann M, Hackelöer B-J, Staudach A. *Ultrasound Diagnosis in Obstetrics and Gynecology*. New York: Springer-Verlag, 1985, p. 176.

Lasser DM, Peisner DB, Vollebergh J, Timor-Tritsch I. "First-trimester fetal biometry using transvaginal sonography." *Ultrasound in Obstetrics and Gynecology* 3:104, 1993.

Merz E, Kim-Kern M-S, Pehl S. " Ultrasonic Mensuration of Fetal Limb Bones in the Second and Third Trimesters." *Journal of Clinical Ultrasound* 15:175, March/April 1987.

Rempen A. "Biometrie in der Frühgravidität (I. Trimenon) (Biometry in Early Pregnancy (1st Trimester))." *Der Frauenarzt* 32:425, 1991, p. 427.

ASUM:

Westerway SC. "Ultrasonic Fetal Measurements: New Australian Standards for the New Millennium." *Aust NZ J Obstet Gynaecol* 40:3:297-302, 2000.

JSUM:

Japan Society of Ultrasonics in Medicine. "Standardization of Fetometry and Official Announcement of Diagnostic Guidelines." *J. Med. Ultrasonics* 30:415-440, 2003.

Osaka:

Aoki M, Yamada M. "Examining Fetal Growth." *Obstetrics and Gynecology* 47:547-556, 1983.

Tokyo:

Masuda H, Shinozuka N, Okai T, Mizuno M. "Diagnosis of the Week of Pregnancy and Prognosis." *Perinatal Care* 8:719-726.

Biparietal Diameter (Outer to Inner)

Chitty, LS, Altman, DG, "Charts of Fetal Size: 2. Head Measurements," *British Journal of Obstetrics & Gynaecology* 101:35-43, 1994.

Biparietal Diameter (Outer to Outer)

Chitty, LS, Altman, DG, "Charts of Fetal Size: 2. Head Measurements," British Journal of Obstetrics & Gynaecology 101:35-43, 1994.

Occipital Frontal Diameter

Chitty, LS, Altman, DG, "Charts of Fetal Size: 2. Head Measurements," *British Journal of Obstetrics & Gynaecology* 101:35-43, 1994.

Hansmann M, Hackelöer B-J, Staudach A. *Ultrasound Diagnosis in Obstetrics and Gynecology*. New York: Springer-Verlag, 1985, p. 176.

ASUM:

Westerway SC. "Ultrasonic Fetal Measurements: New Australian Standards for the New Millennium." *Aust NZ J Obstet Gynaecol* 40:3:297-302, 2000.

Head Circumference

Hadlock FP, Deter RL, Harrist RB, Park SK. "Estimating Fetal Age: Computer-Assisted Analysis of Multiple Fetal Growth Parameters." *Radiology* 152:497, 1984.

Hansmann M, Hackelöer B-J, Staudach A. *Ultrasound Diagnosis in Obstetrics and Gynecology*. New York: Springer-Verlag, 1985, p. 176.

Merz E. *Ultrasound in Gynecology and Obstetrics*. Stuttgart and New York: Thieme Medical Publishers, Inc., 1991, p. 312.

ASUM:

Westerway SC. "Ultrasonic Fetal Measurements: New Australian Standards for the New Millennium." *Aust NZ J Obstet Gynaecol* 40:3:297-302, 2000.

Head Circumference (Plotted)

Chitty, LS, Altman, DG, "Charts of Fetal Size: 2. Head Measurements," *British Journal of Obstetrics & Gynaecology* 101:35-43, 1994.

Abdominal Circumference

Hadlock FP, Deter RL, Harrist RB, Park SK. "Estimating Fetal Age: Computer-Assisted Analysis of Multiple Fetal Growth Parameters." *Radiology* 152:497, 1984.

Jeanty P, Cousaert E, Cantraine F. "Normal growth of the abdominal perimeter." *American Journal of Perinatalogy* 1:136, 1984, p. 133.

Merz E. *Ultrasound in Gynecology and Obstetrics*. Stuttgart and New York: Thieme Medical Publishers, Inc., 1991, p. 312.

ASUM:

Westerway SC. "Ultrasonic Fetal Measurements: New Australian Standards for the New Millennium." *Aust NZ J Obstet Gynaecol* 40:3:297-302, 2000.

JSUM:

Japan Society of Ultrasonics in Medicine. "Standardization of Fetometry and Official Announcement of Diagnostic Guidelines." *J. Med. Ultrasonics* 30:415-440, 2003.

Abdominal Circumference (Plotted)

Chitty, LS, Altman, DG, "Charts of Fetal Size: 2. Head Measurements," *British Journal of Obstetrics & Gynaecology* 101:35-43, 1994.

AXT

Tokyo:

Masuda H, Shinozuka N, Okai T, Mizuno M. "Diagnosis of the Week of Pregnancy and Prognosis." *Perinatal Care* 8:719-726.

JSUM:

Japan Society of Ultrasonics in Medicine. "Standardization of Fetometry and Official Announcement of Diagnostic Guidelines." *J. Med. Ultrasonics* 30:415-440, 2003.

Fetal Trunk Area

Osaka:

Aoki M, Yamada M. "Examining Fetal Growth." *Obstetrics and Gynecology* 47:547-556, 1983.

Femur Length

Hadlock FP, Deter RL, Harrist RB, Park SK. "Estimating Fetal Age: Computer-Assisted Analysis of Multiple Fetal Growth Parameters." *Radiology* 152:497, 1984.

Hansmann M, Hackelöer B-J, Staudach A. *Ultrasound Diagnosis in Obstetrics and Gynecology*. New York: Springer-Verlag, 1985.

Jeanty P, Dramaix-Wilmet M, van Kerkem J, Petroons P, Schwers J. "Ultrasonic Evaluation of Fetal Limb Growth, Part II" *Radiology* 143:751, 1982.

Merz E, Kim-Kern M-S, Pehl S. " Ultrasonic Mensuration of Fetal Limb Bones in the Second and Third Trimesters." *Journal of Clinical Ultrasound* 15:175, March/April 1987.

ASUM;

Australian Society of Ultrasound Medicine (ASUM) - Policy on Obstetric Exams, 1998.

JSUM:

Japan Society of Ultrasonics in Medicine. "Standardization of Fetometry and Official Announcement of Diagnostic Guidelines." *J. Med. Ultrasonics* 30:415-440, 2003.

Osaka:

Aoki M, Yamada M. "Examining Fetal Growth." *Obstetrics and Gynecology* 47:547-556, 1983.

Tokyo:

Masuda H, Shinozuka N, Okai T, Mizuno M. "Diagnosis of the Week of Pregnancy and Prognosis." *Perinatal Care* 8:719-726.

Humerus Length

Jeanty P, Dramaix-Wilmet M, van Kerkem J, Petroons P, Schwers J. "Ultrasonic Evaluation of Fetal Limb Growth, Part II" *Radiology* 143:751, 1982.

Hansmann M, Hackelöer B-J, Staudach A. *Ultrasound Diagnosis in Obstetrics and Gynecology*. New York: Springer-Verlag, 1985.

Merz E, Kim-Kern M-S, Pehl S. "Ultrasonic Mensuration of Fetal Limb Bones in the Second and Third Trimesters." *Journal of Clinical Ultrasound* 15:175, March/April 1987.

ASUM:

Westerway SC. "Ultrasonic Fetal Measurements: New Australian Standards for the New Millennium." *Aust NZ J Obstet Gynaecol* 40:3:297-302, 2000.

Osaka:

Aoki M, Yamada M. "Examining Fetal Growth." *Obstetrics and Gynecology* 47:547-556, 1983.

Ulna Length

Hansmann M, Hackelöer B-J, Staudach A. *Ultrasound Diagnosis in Obstetrics and Gynecology*. New York: Springer-Verlag, 1986.

Jeanty P, Dramaix-Wilmet M, van Kerkem J, Petroons P, Schwers J. "Ultrasonic Evaluation of Fetal Limb Growth, Part II" *Radiology* 143:751, 1982.

Merz E, Kim-Kern M-S, Pehl S. "Ultrasonic Mensuration of Fetal Limb Bones in the Second and Third Trimesters." *Journal of Clinical Ultrasound* 15:175, March/April 1987.

Tibia Length

Hansmann M, Hackelöer B-J, Staudach A. *Ultrasound Diagnosis in Obstetrics and Gynecology*. New York: Springer-Verlag, 1985.

Jeanty P, Dramaix-Wilmet M, van Kerkem J, Petroons P, Schwers J. "Ultrasonic Evaluation of Fetal Limb Growth, Part II" *Radiology* 143:751, 1982.

Merz E, Kim-Kern M-S, Pehl S. "Ultrasonic Mensuration of Fetal Limb Bones in the Second and Third Trimesters." *Journal of Clinical Ultrasound* 15:175, March/April 1987.

Foot Length

Mercer BM, Sklar S, Shariatmadar A, Gillieson MS, Dalton ME. "Fetal foot length as a predictor of gestational age." *American Journal of Obstetrics and Gynecology* 156(2):350, 1987.

Thoracic Circumference

Chitkara U, Rosenberg J, Chervenak FA, Berkowitz GS, Levine R, Fagerstrom RM, Walker B, Berkowitz RL. "Prenatal sonographic assessment of the fetal thorax: Normal values." *American Journal of Obstetrics and Gynecology* 156:1069, 1987.

Clavicle Length

Yarkoni S, Schmidt W, Jeanty P, Reece EA, Hobbins JC. "Clavicular Measurement: A New Biometric Parameter for Fetal Evaluation." *Journal of Ultrasound in Medicine* 4:467, 1985.

Renal Length

Bertagnoli L, Lalatta F, Gallicchio R, Fantuzzi M, Rusca M, Zorzoli A, Deter RL. "Quantitative Characterization of the Growth of the Fetal Kidney." *Journal of Clinical Ultrasound* 11:349, 1983.

Hansmann M, Hackelöer B-J, Staudach A. *Ultrasound Diagnosis in Obstetrics and Gynecology*. New York: Springer-Verlag, 1985.

Renal Anterior Posterior

Bertagnoli L, Lalatta F, Gallicchio R, Fantuzzi M, Rusca M, Zorzoli A, Deter RL. "Quantitative Characterization of the Growth of the Fetal Kidney." *Journal of Clinical Ultrasound* 11:349, 1983.

Hansmann M, Hackelöer B-J, Staudach A. *Ultrasound Diagnosis in Obstetrics and Gynecology*. New York: Springer-Verlag, 1985.

Umbilical Artery (Resistive Index)

JSUM:

Japan Society of Ultrasonics in Medicine. "Standardization of Fetometry and Official Announcement of Diagnostic Guidelines." *J. Med. Ultrasonics* 30:415-440, 2003.

Umbilical Artery (Pulsatility Index)

JSUM:

Japan Society of Ultrasonics in Medicine. "Standardization of Fetometry and Official Announcement of Diagnostic Guidelines." *J. Med. Ultrasonics* 28:844-872, 2001.

Middle Cerebral Artery (Resistive Index)

JSUM:

Japan Society of Ultrasonics in Medicine. "Standardization of Fetometry and Official Announcement of Diagnostic Guidelines." *J. Med. Ultrasonics* 30:415-440, 2003.

Middle Cerebral Artery (Pulsatility Index)

JSUM:

Japan Society of Ultrasonics in Medicine. "Standardization of Fetometry and Official Announcement of Diagnostic Guidelines." *J. Med. Ultrasonics* 30:415-440, 2003.

Estimated Fetal Weight (EFW) for Growth Analysis Graphs

Hadlock FP, Harrist RB, Martinez-Poyer J. "In Utero Analysis of Fetal Growth: A Sonographic Weight Standard." *Radiology* 181:129, 1991.

Hansmann M, Hackelöer B-J, Staudach A. *Ultrasound Diagnosis in Obstetrics and Gynecology*. New York: Springer-Verlag, 1986.

Jeanty P, Cantraine F, Romero R, Cousaert E, Hobbins JC. "A Longitudinal Study of Fetal Weight Growth." *Journal of Ultrasound in Medicine* 3:321, 1984.

Yarkoni S, Reece EA, Holford T, O'Connor TZ, Hobbins JC. "Estimated Fetal Weight in the Evaluation of Growth in Twin Gestations: A Prospective Longitudinal Study." *Obstetrics and Gynecology* 69:636, 1987.

Williams RL, Creasy RK, Cunningham GC, Hawes WE, Norris FD, Tashiro M. "Fetal Growth and Perinatal Viability in California." *Obstetrics and Gynecology* 59:624:632, 1982.

JSUM:

Japan Society of Ultrasonics in Medicine. "Standardization of Fetometry and Official Announcement of Diagnostic Guidelines." *J. Med. Ultrasonics* 30:415-440, 2003.

Osaka:

Aoki M, Yamada M. "Examining Fetal Growth." *Obstetrics and Gynecology* 47:547-556, 1983.

Toyko:

Masuda H, Shinozuka N, Okai T, Mizuno M. "Diagnosis of the Week of Pregnancy and Prognosis." *Perinatal Care* 8:719-726.

Ratios and Indices for Growth Analysis Graphs

AFI (Amniotic Fluid Index)

Moore TR, Cayle JE. "The amniotic fluid index in normal human pregnancy." *American Journal of Obstetrics and Gynecology* 162:1168, 1990.

LVW/HW (Lateral Ventricular Width/Hemispheric Width) Ratio

Johnson ML, Dunne MG, Mack LA, Rashbaum CL. "Evaluation of Fetal Intracranial Anatomy by Static and Real-Time Ultrasound." *Journal of Clinical Ultrasound* 8:311, 1980.

TCD/AC Ratio

Meyer WJ, Gauthier DW, Goldenberg B, Santolaya J, Sipos J, Cattledge F. "The Fetal Transverse Cerebellar Diameter/Abdominal Circumference Ratio: A Gestational Age-Independent Method of Assessing Fetal Size." *Journal of Ultrasound in Medicine* 12:379, 1993.

Other Calculations

Corrected BPD

Doubliet PM, Greenes RA. "Improved Prediction of Gestational Age from Fetal Head Measurements." *American Journal of Roentgenology.* 142:797, 1984.